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JVC HD-56FH97 SERVICE MANUAL

Table of Contents

Table of Contents
PRECAUTION
SPECIFIC SERVICE INSTRUCTIONS
DISASSEMBLY
ADJUSTMENT
TROUBLESHOOTING
Other ManualsLib Projects

JVC

SERVICE MANUAL

D-ILA PROJECTION TELEVISION

HD-56FH97, HD-56FN97, HD-61FH97, HD-61FN97

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TABLE OF CONTENTS

1 PRECAUTION 1-3
2 SPECIFIC SERVICE INSTRUCTIONS 1-7
3 DISASSEMBLY 1-10
4 ADJUSTMENT 1-24
5 TROUBLESHOOTING 1-32

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SPECIFICATION

Items		Contents			
		HD-56FH97	HD-56FN97	HD-61FH97	HD-61FN97
Dimensions (W × H × D)		129.2 cm × 94.4 cm × 45.0 cm (50-7/8" × 37-1/8" × 17-3/4")		140.3 cm × 101.6 cm × 48.4 cm (55-1/4" × 40" × 19")	
Mass		41 kg (91 lbs)		45 kg (99 lbs)	
TV RF System (Analog / Digital)	Analog Digital	CCIR (M) ATSC terrestrial / Digital cable			
Color System (Analog)		NTSC			
Stereo System (Analog)		BTSC (Multi Channel Sound)			
Teletext System (Analog)		Closed caption (T1-T4 / CC1-CC4)			
TV Receiving Channels and Frequency (Analog)	VHF Low VHF High UHF CATV	02ch - 06ch : 54MHz - 88MHz 07ch - 13ch : 174MHz - 216MHz 14ch - 69ch : 470MHz - 806MHz 54MHz - 804MHz Low Band : 02 - 06 High Band : 07 - 13 Mid Band : 14 - 22 Super Band : 23 - 36 Hyper Band : 37 - 64 Ultra Band : 65 - 94, 100 - 135 Sub Mid Band : 01, 96 - 99			
TV / CATV Total Channel		191 Channels			
Intermediate Frequency (Analog)	Video IF Sound IF	45.75 MHz 41.25 MHz (4.5MHz)			
Color Sub Carrier Frequency (Analog)		3.58 MHz			
Power Input		AC120V, 60Hz			
Power Consumption		215W			
Projection Source		110W High-pressure mercury lamp			
Projection Device		D-ILA device (Reflection active matrix type LCD) x 3(R / G /B)			
Resolution		Total=H:1952 × V:1088 [Effective =H:1920 × V:1080]			
Screen		Transparent screen (unitized fresnel lens / lenticular lens), aspect ratio 16:9			
Screen Size		56" (142cm) Measured diagonally H:124 cm × V:69.8cm		61" (155cm) Measured diagonally H:135 cm × V:76.0cm	
Audio Power Output		10W + 10W			
Speaker		8.5cm × 12.5cm oval type × 2 (Oblique corn)			
Antenna Terminal (VHF/UHF, ATSC / DIGITAL CABLE IN)		F-type connector, 75Ω unbalanced, coaxial × 2			
Video / Audio Input [INPUT-1/2/3/4]	Component Video [INPUT-1/2] 1125i / 750p 525p / 525i S-Video [INPUT-1/3] Video Audio	RCA pin jack × 6 Y : 1V (p-p) (Sync signal: 0.35V(p-p), 3-value sync.), 75 Ω Pb/Pr : ±0.35V(p-p), 75 Ω Y : 1V (p-p), positive (Negative sync provided), 75 Ω Pb/Pr : 0.7V(p-p), 75 Ω Mini-DIN 4 pin × 2 Y: 1V (p-p), positive (Negative sync provided), 75 Ω C: 0.286V (p-p) (Burst signal), 75 Ω 1V (p-p), positive (Negative sync provided), 75 Ω, RCA pin jack × 4 500mV (rms), high impedance, RCA pin jack × 8			
Digital Input	Video Audio	HDMI 2-row 19pin connector × 2 (Digital-input terminal is not compatible with picture signals of personal computer) Digital: HDMI 2-row 19pin connector × 2 Analog: 500mV(rms) (-4dBs), high impedance, RCA pin jack × 2			
PC (RGB) Input		D-sub 3-row 15pin × 1 R/G/B : 0.7V (p-p), 75Ω HD / VD : 1V (p-p) to 5V (p-p), high impedance < Available signal > VGA : 640 pixels × 480 pixels (Horizontal : 31.5kHz / Vertical : 60Hz) XGA : 1024 pixels × 768 pixels (Horizontal : 48.4kHz / Vertical : 60Hz)			
Center Channel Input		500mV(rms) (-4dBs), high impedance, RCA pin jack × 1			
Monitor / Recording Output	S-Video Video Audio	Mini-DIN 4pin × 1 Y: 1V (p-p), 75Ω C: 0.286V(p-p) (burst signal), 75Ω 1V (p-p), 75Ω, RCA pin jack × 1 250mV(rms) (-10dBs), Fs-18dB low impedance, RCA pin jack × 2			
Audio Output	 Variable Fix	RCA pin jack × 2 More than 0 to 1000mV (rms) (+2.2dBs) 500mV(rms) (-4dBs), low impedance (1000Hz when modulated 100%)			
iLink Input/Output		TS In/Out (4-pin, S400) × 2, IEEE1394 compliant DTCP digital copy protection compatible			
Digital Audio Optical Output		Digital SPDIF × 1			
RS-232C		D-sub 2-row 9 pin [External control for TV set]	---	D-sub 2-row 9 pin [External control for TV set]	---
Remote Control Unit		RM-C14G (AA/R6 / UM-3 battery × 2)			

Design & specifications are subject to change without notice.

SECTION 1
PRECAUTION

1.1 SAFETY PRECAUTIONS

(1) The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

(2) Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

(3) Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual**. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

(4) **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED (NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND.
Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time with a measuring apparatus (oscilloscope etc.). If above note will not be kept, a fuse or any parts will be broken.

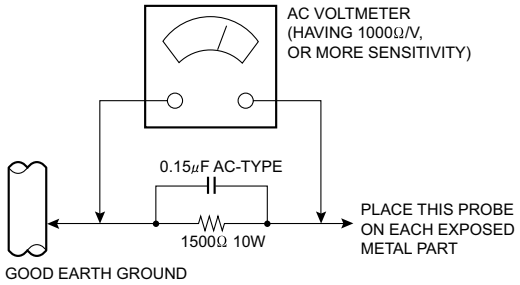
(5) When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

(6) **Isolation Check (Safety for Electrical Shock Hazard)**
After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

a) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second. (. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

b) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

Alternate Check Method
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000Ω per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



1.2 INSTALLATION

1.2.1 HEAT DISSIPATION

If the heat dissipation vent behind this unit is blocked, cooling efficiency may deteriorate and temperature inside the unit will rise. The temperature sensor that protects the unit will be activated when internal temperature exceeds the predetermined level and power will be turned off automatically.
Therefore, please make sure pay attention not to block the heat dissipation vent as well as the ventilation outlet behind the unit and ensure that there is room for ventilation around it.
Do not put foreign objects near the ventilation holes as this can result in fire or electrical hazards.
Do not block the ventilation holes as this may cause the internal temperature to rise and possibly result fire.

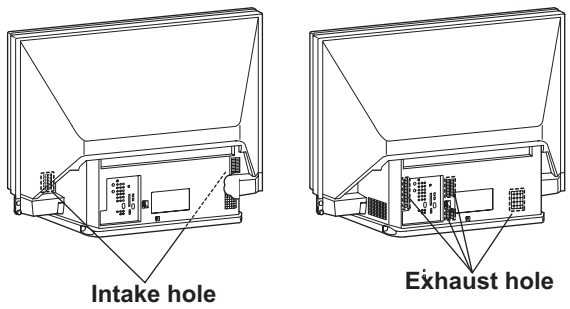


*Diagram differs from actual appearance.

1.2.2 INSTALLATION REQUIREMENTS

Ensure that the minimal distance is maintained, as specified fingure, between the unit with and the surrounding walls, as well as the floor etc.
Install the unit on stable flooring.
Take precautionary measures to prevent the unit from tipping in order to protect against accidents and earthquakes.

CAUTION FOR INSTALLATION

- Do not tilt the TV towards the left or right, or toward the back.
- Install the TV in a corner on the floor so as to keep cords out of the way.
- The TV will generate a slight amount of heat during operation. Ensure that sufficient space is available around the TV to allow satisfactory cooling.

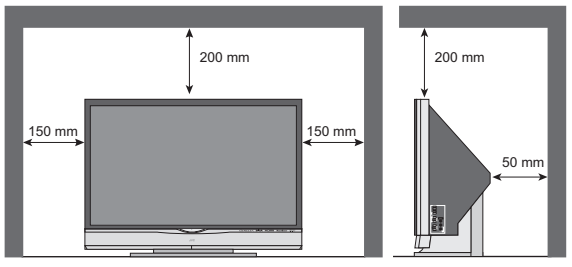
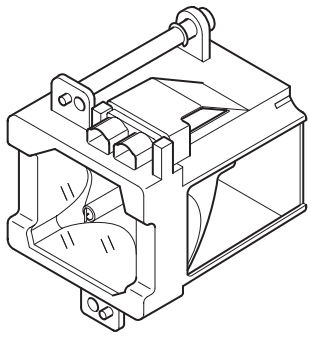


*Diagram differs from actual appearance.

1.3 LAMP UNIT HANDLING CAUTION

LAMP UNIT : TS-CL110UAA



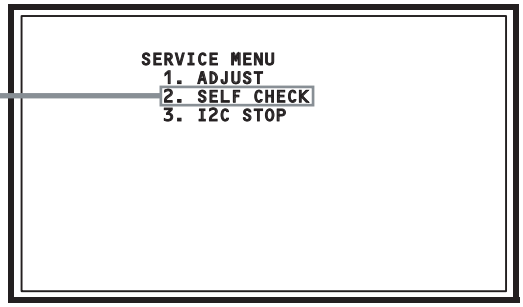
1.3.1 PRECAUTION FOR LAMP UNIT

The lamp emits high intensity white, ultraviolet and infrared light. Do not look directly at the light during service.
Also, do not touch the lamp directly as it presents a burn hazard.
Handle with extra care. This lamp emits high heat and contains high-pressure during use.
Do not give any impact as this may cause the broken lamp.

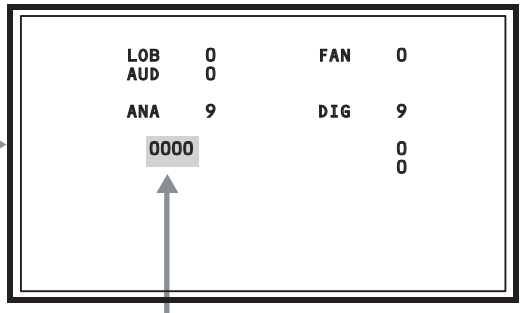
1.3.2 HOW TO CONFIRM LAMP OPERATING TIME

- MAXIMUM COUNT TIME= **65535 hours**
  (1) Set to **"0 minutes"** using the **[SLEEP TIMER]** key.
  (2) Press the **[VIDEO STATUS]** key and **[DISPLAY]** key simultaneously, then enter the SERVICE MODE.
  (3) When the SERVICE MENU SCREEN is displayed, press **[2]** key to enter the SELF CHECK MODE.
  (4) The use time of a lamp is displayed on middle of the screen by the hexadecimal number of 4 figures.

SERVICE MENU SCREEN



SELF CHECK MODE SCREEN (Page 1)



Lamp operation time (Hexadecimal)

CALCULATION EXAMPLE OF LAMP USE TIME
Ex. Display number=12EF
$1x16^3+2x16^2+Ex16+Fx1=1x4096+2x256+14x16+15=4847$ hours

1.3.3 LAMP UNIT REPLACEMENT

(1) The lamp replacement message will appear when need to change the lamp. After replace the lamp, need to reset the timer which is built into TV.
(2) Lamp use time can be check at the lamp message MENU. If lamp use time exceeds **5000 hours**, the message of Fig.1 will be displayed on a screen.
(3) If Fig.1 message appears when turn the TV on, need to replace the lamp.
(4) Use the lamp timer reset only after replacing the lamp.

NOTE:

- This message will appear every time turn on the TV, when the lamp needs to be replaced. Press the **[OK]** key to make the message disappear, or replace the lamp.

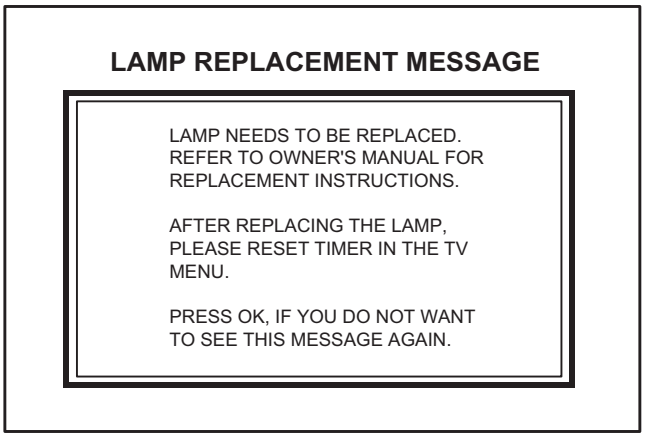

LAMP REPLACEMENT MESSAGE
LAMP NEEDS TO BE REPLACED.
REFER TO OWNER'S MANUAL FOR
REPLACEMENT INSTRUCTIONS.
AFTER REPLACING THE LAMP,
PLEASE RESET TIMER IN THE TV
MENU.
PRESS OK, IF YOU DO NOT WANT
TO SEE THIS MESSAGE AGAIN.

Fig.1

1.3.4 HOW TO REPLACE THE LAMP UNIT

- Refer to the "**USERS GUIDE**" for a detailed operating description.

(1) Turn off the TV power.
(2) After the LAMP LED light has stopped blinking, disconnect the power cord from the AC outlet.
(3) Loosen 1 screw then take out the lamp cover below the left side of the TV.
(4) Loosen 2 screws then take out the lamp unit.
(5) Install the new lamp unit.
(6) Re-install the lamp cover.

NOTE:

- After installing the new lamp unit, do not forget to reset the lamp timer.

1.3.5 HOW TO RESET THE LAMP TIMER

- Refer to the "**USERS GUIDE**" for a detailed operating description.

(1) Press the **[MENU]** key to select CLOCK / TIMERS.
(2) Select the <LAMP TIMER RESET> with **[▲]** / **[▼]** keys.
(3) Enter the <LAMP TIMER RESET> mode, the following message will appears.

PRESS OK TO RESET THE LAMP TIMER

(4) Press the **[OK]** key while the above message appears on the screen.
(5) The lamp timer has now been reset, and the following message will appear.

THE LAMP TIMER IS RESET SUCCESSFULLY

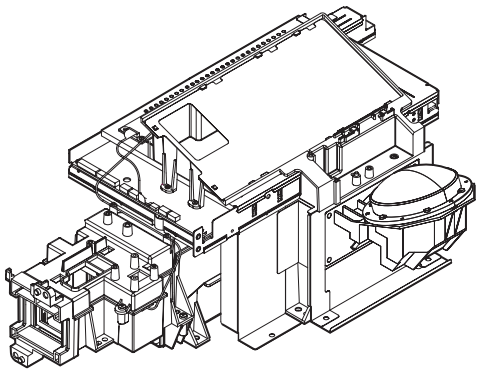
1.3.6 PRECAUTION FOR REPLACEMENT

- Do not replace the LAMP UNIT immediately after the projector has been used.
- The temperature of the LAMP UNIT is still high and could cause a burn.
- Allow a cooling period of 1 hour or more before performing replacement.
- Before starting LAMP UNIT replacement work, turn off the MAIN POWER switch, and disconnect the AC power cord plug from the wall outlet.
- If touched, the lamp glass surface may rupture and burns may result. Do not touch the glass portion or metal portion. Handle only plastic handle.
- The replaced old lamp can be discarded in the same manner as a fluorescent lamp. Check local ordinances and dispose of the used lamp as prescribed.

1.4 SERVICE PARTS KIT INSTRUCTIONS

Due to the character of this product, these OPTICAL /DRIVE ASS'Y are prepared.
Please note these OPTICAL/DRIVE ASS'Y when replacing or ordering the parts.

OPTICAL/DRIVE ASS'Y



1.4.1 PART NUMBER AND CONSTRUCTION

Kit parts number	Kit part name
TS-COP13A-SAA	OPTICAL / DRIVE ASS'Y

1.4.2 OPTICAL / DRIVE ASS'Y CONSTRUCTION

(1) OPTICAL BLOCK
(Included D-ILA DEVICE, PROJECTION LENS)
(2) OPTICAL BASE
(3) DRIVE PWB ASS'Y
This PWB is mounted with 1 memory IC saved with adjustment, setting data of the drive circuit.
(4) SHIELD COVER
*The following parts without the kits part.
- REMOTE SENSOR PWB ASS'Y
- LAMP UNIT
- LAMP FAN DUCT
- THERMOSTAT

1.4.3 PRECAUTION FOR USING

(1) In the case of the following defects/problems, replace this kit (OPTICAL/DRIVE ASS'Y)
a) Picture defect caused by optical system/D-ILA device related parts.
b) Picture defect caused by drive circuit.
(2) The DRIVE PWB ASS'Y is mounted with a memory IC [IC3753] saved with adjustment/setting data(GAMMA, SHADING, etc.) of the drive circuit.
The data of this memory IC is in the optimal state according to individual D-ILA devices and each section of the OPTICAL BLOCK.
(3) When replace the DRIVE PWB ASS'Y, take off the 1 memory IC from the original board and replace with new one. When replace the DRIVE PWB ASS'Y, do same manner. Replace 1 memory IC.
(4) After the replacement of the OPTICAL BLOCK, projection lens focus adjustment and drive convergence / projection adjustment are required.

1.5 SCREEN HANDLING CAUTIONS

1.5.1 SCREEN STORAGE

Store the SCREEN ASS'Y in a standing position in order to avoid deformation. If the screen is stored horizontally, there is risk of deforming the screen face.
When necessary to place the SCREEN ASS'Y horizontally, position the screen side upwards and sure to place spacers between the screen and resting site (floor or stand etc.) to prevent the screen from sagging.

1.5.2 SCREEN SURFACE

Since the screen surface is easily scratched or soiled, use ample care when handling.

1.5.3 PRECAUTIONS FOR CLEANING AND REPLACEMENT

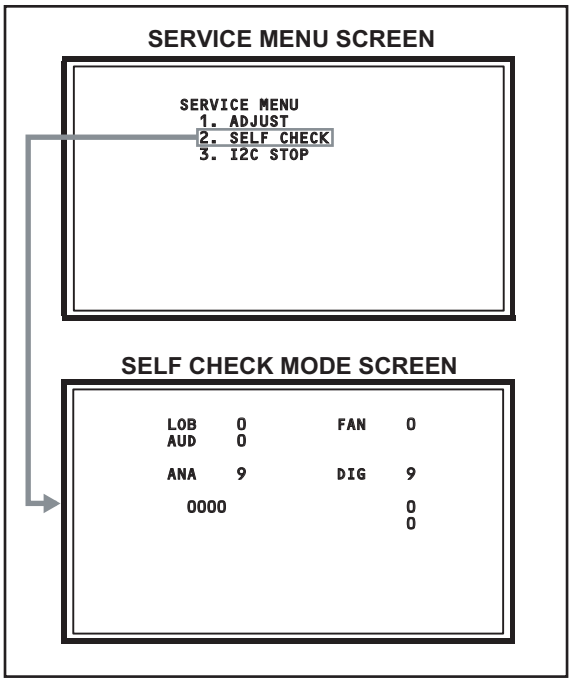
- The SCREEN ASS'Y is made from the lenticular lens and fresnel lens. The anti static proceeding and the surface of the lenticular lens. Rubbing the surface with something hard, the coating may peel off.
- When the screen is dirty, gently wipe it with a soft cloth.
  If the screen is very dirty, wipe it down with a cloth dipped in a diluted kitchen cleaner (neutrality detergent) and thoroughly wrung-out. Then wipe immediately after with clean, dry cloth.
  Never use the organic solvent such as the alcohol or benzine.
- The SCREEN ASS'Y replacement is required if the coating was peel off. Alkaline detergent or acidity detergent can not be be used.
- The notched side of the lenticular lens and the fresnel lens are faced each other.
- Do not rub the screen when cleaning it or replaceing it. Rubbing the screen may cause of the scratch of the screen by its notch.

SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

2.1 SYSTEM SETTEING

Be sure to carry out the following operation at the end of the procedure.

(1) Set to **"0 minutes"** using the **[SLEEP TIMER]** key.
(2) While **"0 minutes"** is displayed, press the **[VIDEO STATUS]** key and **[DISPLAY]** key simultaneously, then enter the SERVICE MODE.
(3) When the SERVICE MENU SCREEN is displayed, press **[2]** key to enter the self check mode.
(4) Turn off the power by pressing the **[POWER]** key on the remote control unit.



2.2 FEATURES

Built in ATSC (Advanced Television Systems Committee) TUNER
This TV can receive both Digital broadcasting (ATSC) and Analogue broadcasting.

D.I.S.T. (Digital Image Scaling Technology)
This system uses line interpolation to double the number of scanning lines and achieve high resolution, flicker-free picture.

SMART CAPTION
Smart caption will appear when you press the MUTING button, only on channels where the broadcast contains CLOSED CAPTION information.

VIDEO STATUS
Expression of a favorite screen can be chosen by the VIDEO STATUS function.

DIGITAL INPUT
Digital-in will display when any picture signal in Digital-in is displayed.

V-CHIP
Since the V-CHIP is built in, it can choose, view and listen to a healthy program.

MTS STEREO
The voice multiplex function of the MTS system is built in. (MTS = Multi channel Television Sound system)

MPEG Noise Reduction
This function effects the block noise removal and mosquito NR simultaneously.

MaxxBass
This function emphasizes the bass sound.

A.H.S.+
Adds a more spacious surround sound. Music gives basic effect, and movie for more effect.

VOICE ENHANCEMENT
Gives a clearer sound quality of the voices in what you are watching.

NATURAL CINEMA
Watching the movie or animation, press the Natural Cinema to adjust the out line of the images to make thin more sharp.

VIDEO INPUT LABEL
This function is used to label video input connections for the onscreen displays.

2.3 MAIN DIFFRENCE LIST

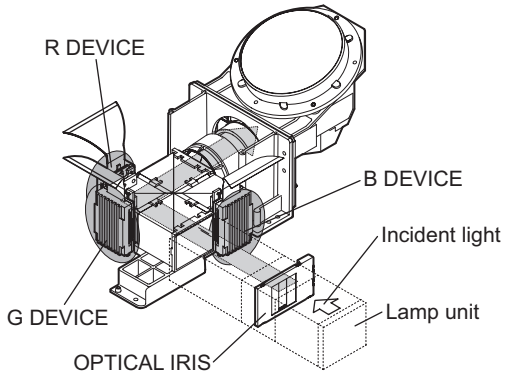
Item	HD-56FH97	HD-56FN97	HD-61FH97	HD-61FN97
FRONT PANEL COLOR	BLACK	SILVER & BLACK	BLACK	SILVER & BLACK
DIGITAL PWB	SRA0D124A-M2	SRA0D127A-M2	SRA0D123A-M2	SRA0D126A-M2
ANALOG PWB	SRA-1015A-M2	SRA-1016A-M2	SRA-1015A-M2	SRA-1016A-M2
SIDE CONTROL PWB	SRA0L012A-M2	SRA0L013A-M2	SRA0L012A-M2	SRA0L013A-M2

2.4 TECHNICAL INFORMATION

2.4.1 D-ILA DEVICE SPECIFICATION

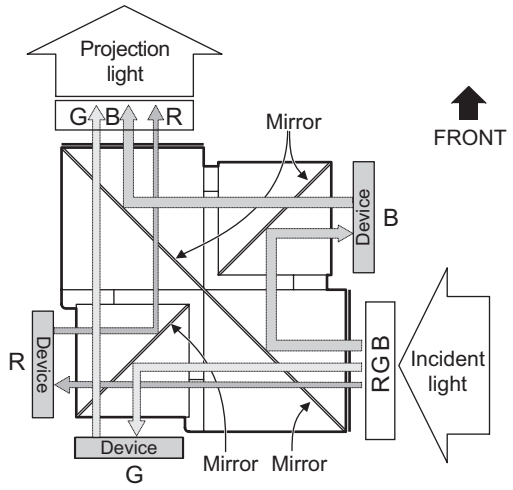
Item	Content
Resolution	H: 1952 × V:1088
Pixel number	about 2123776
Pixel size	H : 8.1μm × V :8.1μm
Aspect ratio	16 : 9
Contrast ratio	5000 : 1
Aperture ratio	89% or more
Effective pixel measurement	0.7 inch

2.4.2 PROJECTION UNIT



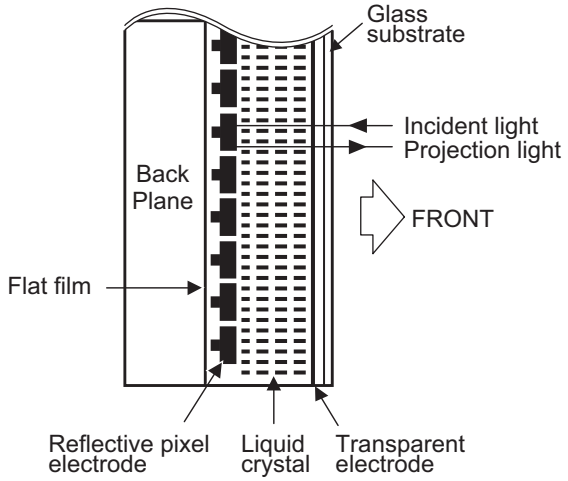
2.4.3 IMAGE LIGHT FLOW

DEVICE UNIT SECTION (TOP VIEW)

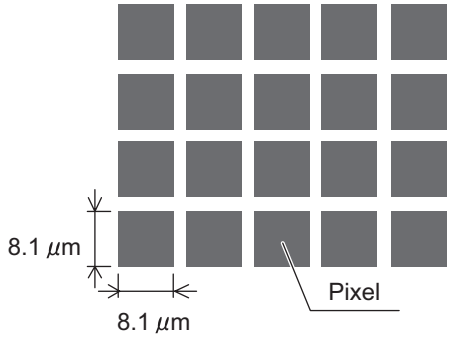


2.4.4 D-ILA DEVICE STRUCTURE

R / G / B DEVICE (SIDE VIEW)



PIXEL VIEW (FRONT VIEW)



2.4.5 MAIN CPU PIN FUNCTION [IC7601 : DIGITAL PWB ASS'Y]

Pin	Pin name	I/O	Function	Pin	Pin name	I/O	Function
1	VHOLD1	I	Data slice for main screen closed caption	51	NC	O	Not used
2	HFLT1	I/O	LPF for main screen closed caption video input	52	NC	O	Not used
3	NC	O	Not used	53	NC	O	Not used
4	NC	O	Not used	54	NC	O	Not used
5	DIGR0	O	R [0] for OSD	55	NC	O	Not used
6	TB1in	I	AC power for timer clock	56	NC	O	Not used
7	REMO	I	Remote control	57	NC	O	Not used
8	BYTE	I	Data bus width select [L = 16bit (fixed)]	58	NC	O	Not used
9	CNVss	I	CPU programming mode select [Normal = L]	59	NC	O	Not used
10	DIGG0	O	G [0] for OSD	60	NC	O	Not used
11	DIGB0	O	B [0] for OSD	61	NC	O	Not used
12	RESET	I	Reset for main CPU [Reset = L]	62	HSYNC	I	H. sync for OSD
13	Xout	O	System clock osillation (crystal) : 16MHz	63	NC	O	Not used
14	Vss	-	GND	64	VSYNC	I	V. sync for OSD
15	Xin	I	System clock osillation (crystal) : 16MHz	65	NC	O	Not used
16	Vccl	I	3.3V stand-by power supply	66	NC	O	Not used
17	OSC1	I	Clock for OSD	67	NC	O	Not used
18	OSC2	O	Not used : Clock for OSD	68	NC	O	Not used
19	INT1	I	Not used: AV COMPULINK control	69	NC	O	Not used
20	INT0	I	Request for sub(chassis) CPU communication (serial data)	70	NC	O	Not used
21	OUT1	O	Ys (blanking) for OSD	71	P2.1	O	Not used: Clock for Inter IC (serial) bus control
22	OUT2	O	YM (transparence) for OSD	72	P2.0	I/O	Not used: Data for Inter IC (serial) bus control
23	NC	O	Not used	73	NC	O	Not used
24	NC	O	Not used	74	NC	O	Not used
25	NC	O	Not used	75	NC	O	Not used
26	NC	O	Not used	76	NC	O	Not used
27	CTA2/RTS2	O	Not used	77	NC	O	Not used
28	CLK2	O	Not used	78	NC	O	Not used
29	RxD2	I	Digital tuner control	79	NC	O	Not used
30	TxD2	O	Digital tuner control	80	P1.0	O	Not used: Function LED lighting
31	SDA2	I/O	Not used	81	P0.7	O	Not used: Communication LED lighting
32	DIGR1	O	R [1] for OSD	82	P0.6	O	Test point
33	DIGG1	O	G [1] for OSD	83	NC	O	Not used
34	DIGB1	O	B [1] for OSD	84	WAKE	O	Reset for sub(chassis) CPU
35	TxD0	I	Data receive (serial) for external programming	85	CARD_DET	I	Not used
36	RxD0	O	Data transmission (serial) for external programming	86	POWER_SW	I	Power switch (mechanical) detection
37	CLK0	I	Clock for external programming	87	SDA	I/O	Data for Inter IC (serial) bus control : memory
38	RTS0	O	Busy for external programming [Operation = H]	88	SLC	O	Clock for Inter IC (serial) bus control : memory
39	P5.7	I	Not used	89	DIGR2	O	R [2] for OSD
40	P5.6	O	Not used	90	DIGG2	O	G [2] for OSD
41	HOLD	I	CPU programming mode select [Normal = H]	91	DIGB2	O	B [2] for OSD
42	P5.4	O	Not used	92	NC	O	Not used
43	P5.3	O	Not used	93	KEY2	I	Key scan data for front control button (MENU/CH+/CH-) KEY2
44	P5.2	O	Not used	94	KEY1	I	Key scan data for front control button (INPUT/VOL+/VOL-) KEY1
45	P5.1	O	Not used	95	VHOLD2	I	Data slice for sub screen closed caption
46	WR	O	CPU programming mode select [Normal = L]	96	HLF2	I/O	LPF for sub screen closed caption video input
47	P4.7	O	Data transmission for sub(chassis) CPU communication (serial)	97	CVIN2	I	Video(Y) for sub screen closed caption
48	P4.6	I	Data receive for sub(chassis) CPU communication (serial)	98	TVSETB	I	Test terminal [L Fixed]
49	P4.5	I	Clock for sub(chassis) CPU communication (serial)	99	VCCE	I	5V stand-by power supply
50	P4.4	O	Not used	100	CVIN1	I	Video(Y) for main screen closed caption

SECTION 3
DISASSEMBLY

3.1 DISASSEMBLY PROCEDURE

CAUTION AT DISASSEMBLY:

- **Be sure to perform the SYSTEM SETTEING, at the end of the procedure.**
- Make sure that the power cord is disconnected from the outlet.
- Pay special attention not to break or damage the parts.
- When removing each board, remove the connectors as required. Taking notes of the connecting points (connector numbers) makes service procedure manageable.
- Make sure that there is no bent or stain on the connectors before inserting, and firmly insert the connectors.
- Wait until the LAMP UNIT has cool down is completely.
- While not in repair service, place the chassis back its original position.

3.1.1 FRONT SIDE DISASSEMBLY

3.1.1.1 REMOVING THE SPEAKER GRILL (Fig.1)

(1) Remove the 4 screws **[A]**.
(2) Remove the 2 claws under the SPEAKER GRILL.
(3) Remove the SPEAKER GRILL by pressing it downward.

3.1.1.2 REMOVING THE FRONT LED PWB (Fig.1)

- Remove the SPEAKER GRILL.
  (1) Remove the 3 screws **[B]**.
  (2) Remove the FRONT LED PWB.

3.1.1.3 REMOVING THE CENTER COVER (Fig.1)

- Remove the SPEAKER GRILL.
  (1) Remove the 2 screws **[C]**.
  (2) Remove the CENTER COVER.

3.1.1.4 REMOVING THE FRONT PANEL WITH SCREEN ASS'Y (Fig.1)

- Remove the SPEAKER GRILL.
  (1) Remove the 8 screws **[D]**.
  (2) Remove the 10 screws **[E]**.
  (3) Remove the FRONT PANEL with SCREEN ASS'Y.

CAUTION:

- **Place the FRONT PANEL with SCREEN ASS'Y on a flat table without fail.**
- **Because of the large size, at least 2 persons are recommended for removal and reassemble.**
- **Use care not to scratch the screen during work.**
- **Do not leave the FRONT PANEL with SCREEN ASS'Y removed for long time to prevent soiling from dust.**

3.1.1.5 REMOVING THE SCREEN ASS'Y (Fig.1)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL with SCREEN ASS'Y.
  (1) Remove the 10 screws **[F]**.
  (2) Remove the 8 screws **[G]**.
  (3) Remove the SCREEN BRACKET.
  (4) Remove the SCREEN ASS'Y from the FRONT PANEL

NOTE:

- When replacing the SCREEN ASS'Y, confirm each SPACER is fit on the SCREEN BRACKET and the FRONT PANEL without fail.
- Do not touch the front of the SCREEN ASS'Y.
- Do not shock the SCREEN ASS'Y.
- Because of the large size, at least 2 persons are recommended for removal and reassemble.

3.1.1.6 REMOVING THE SPEAKER (Fig.1)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL with SCREEN ASS'Y.
  (1) Remove the 4 screws **[H]**.
  (2) Remove the SPEAKER.
  (3) Remove the opposite SPEAKER by the same method.

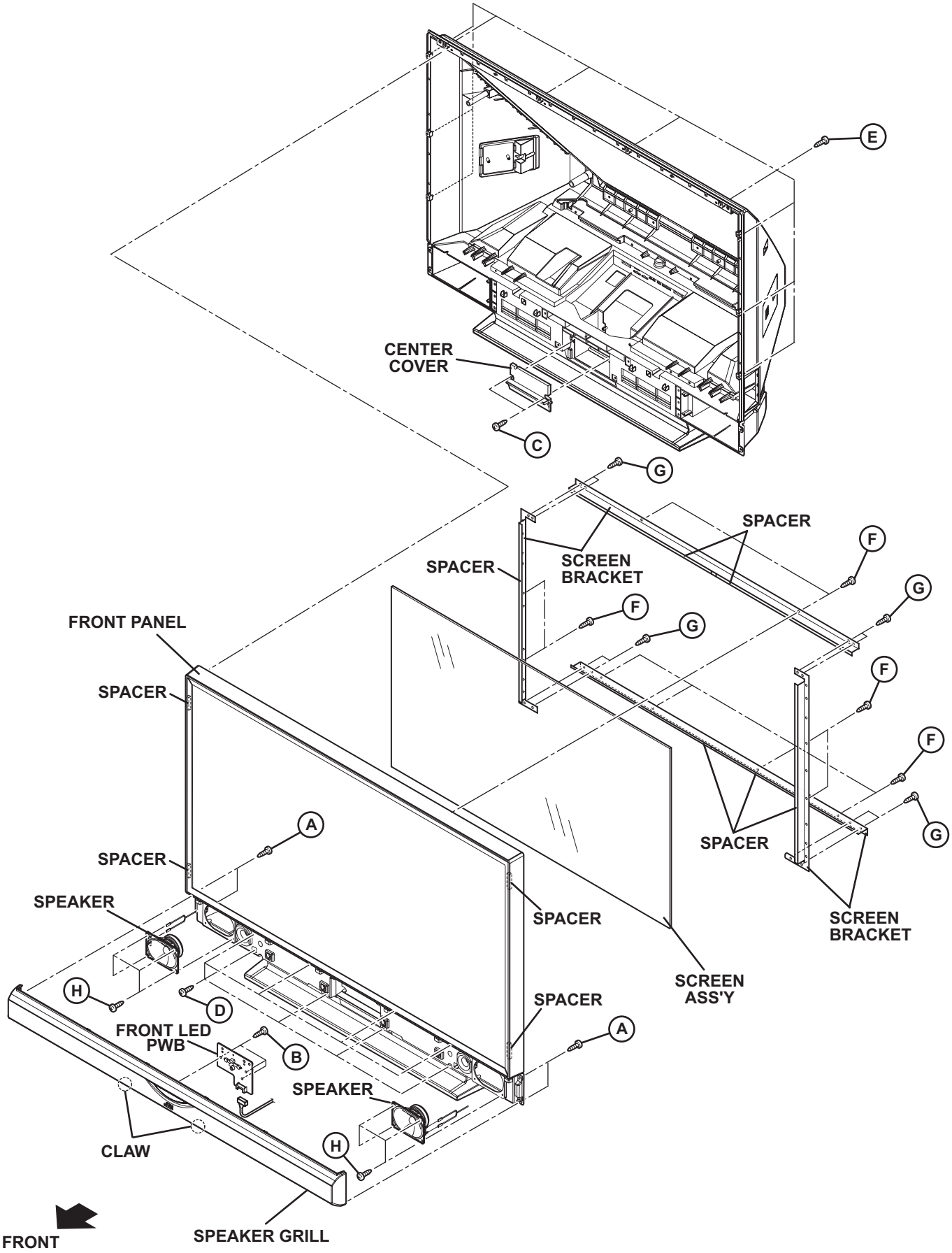

E
CENTER COVER
C
G
SPACER
SCREEN BRACKET
SPACER
F
G
FRONT PANEL
F
G
SPACER
F
F
G
SPACER
SCREEN BRACKET
A
SPACER
SPEAKER
SPACER
SCREEN ASS'Y
H
D
SPACER
FRONT LED PWB
B
A
SPEAKER
CLAW
H
FRONT
SPEAKER GRILL

Fig.1

3.1.1.7 REMOVING THE MIRROR (Fig.2)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL with the SCREEN ASS'Y.
  (1) Remove the 4 screws **[A]** attaching the MIRROR HOLDER of the upper side.
  (2) Remove the 6 screws **[B]** attaching the MIRROR HOLDER of left and right side.
  (3) Loosen the 4 screws **[C]** attaching the MIRROR HOLDER of bottom side.
  (4) Raise slightly to disengage of the MIRROR from the bottom MIRROR HOLDER.
  (5) Remove the MIRROR.

NOTE:

- Do not touch the front of the MIRROR.
- Do not shock the MIRROR.
- Because of the large size, at least 2 persons are recommended for removal and reassemble.

3.1.1.8 REMOVING THE SIDE CONTROL PWB (Fig.2)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL with the SCREEN ASS'Y.
  (1) Remove the 3 screws **[D]**.
  (2) Remove the SIDE CONTROL PWB from the SIDE CONTROL BASE.

NOTE:

The SIDE CONTROL BASE is taken out by removing six claws.

3.1.1.9 REMOVING THE SUPPORT BRACKET (Fig.2)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL with the SCREEN ASS'Y.
  (1) Remove the 3 screws **[E]**.
  (1) Remove the SUPPORT BRACKET.
  (2) Remove the opposite SUPPORT BRACKET by the same method.

3.1.1.10 REMOVING THE BACK COVER (Fig.2)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL with the SCREEN ASS'Y.
- Remove the SUPPORT BRACKET.
  (1) Remove the 2 screws **[F]** and 2 screws **[G]** from rear side.
  (2) Remove the 4 screws **[H]**.
  (3) Remove the BACK COVER.

CAUTION :

Because of the large size, at least 2 persons are recommended for removal and reassemble.

3.1.1.11 REMOVING THE SHADE COVER (Fig.2)

- Remove the SPEAKER GRILL.
- Remove the FRONT PANEL with the SCREEN ASS'Y.
- Remove the SUPPORT BRACKET.
- Remove the BACK COVER.
  (1) Remove the 2 screws **[J]**.
  (2) Remove the SHADE COVER.

3.1.1.12 REMOVING THE FILTER (Fig.2)

(1) Remove the 1 screw **[K]**.
(2) Remove the FILTER COVER.
(3) Remove the FILTER from FILTER COVER.
(4) Remove the opposite FILTER by the same method.

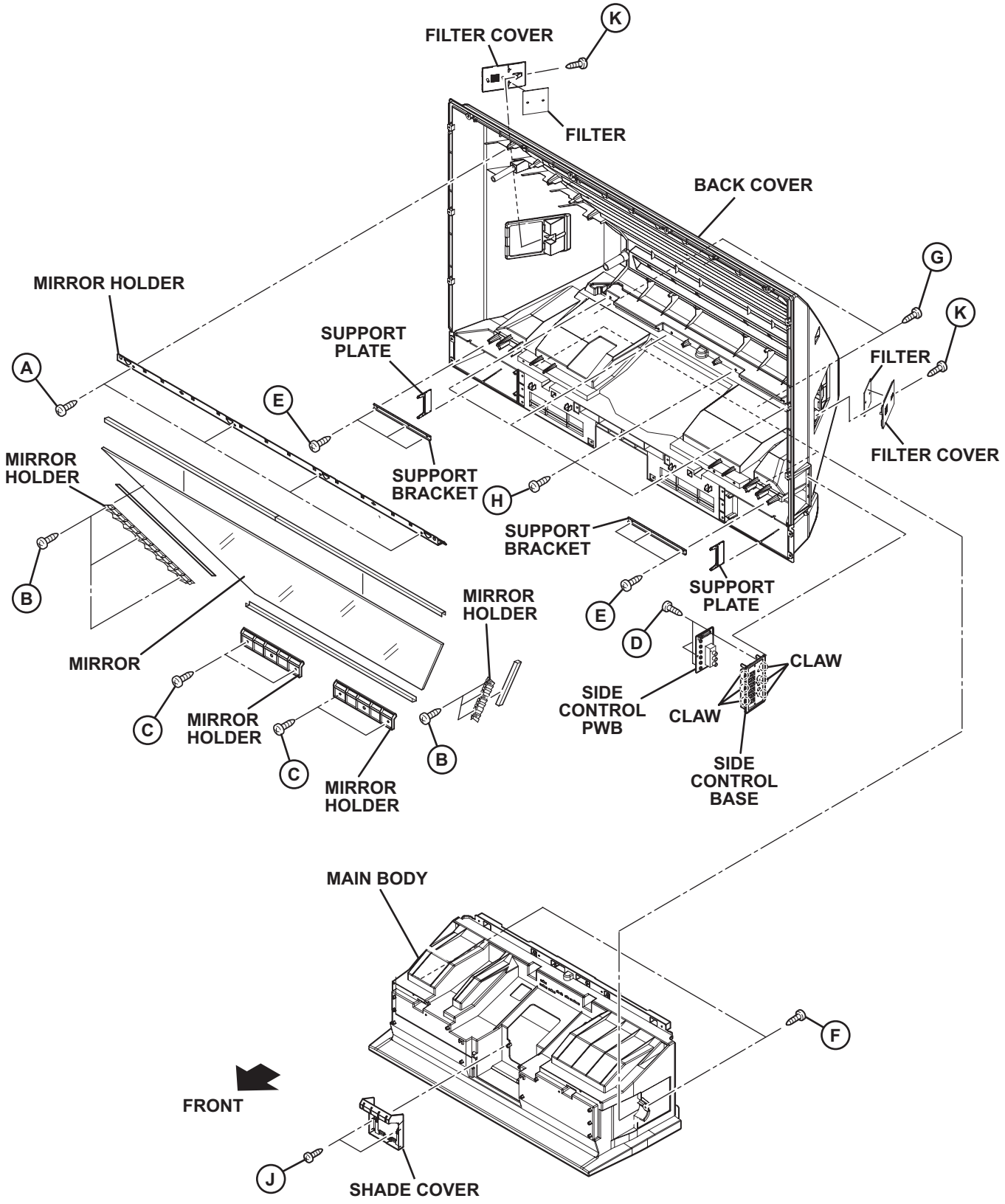

FILTER COVER
K
FILTER
BACK COVER
MIRROR HOLDER
G
K
SUPPORT PLATE
A
E
FILTER
FILTER COVER
MIRROR HOLDER
SUPPORT BRACKET
H
SUPPORT BRACKET
B
SUPPORT PLATE
E
D
MIRROR HOLDER
MIRROR
CLAW
SIDE CONTROL PWB
CLAW
C
MIRROR HOLDER
B
C
MIRROR HOLDER
SIDE CONTROL BASE
MAIN BODY
F
FRONT
J
SHADE COVER

Fig.2

3.1.2 REAR SIDE DISASSEMBLY

3.1.2.1 REMOVING THE LAMP UNIT (Fig.3)

(1) Remove the 1 screw **[A]**.
(2) Remove the LAMP COVER.
(3) Remove the 2 screws **[B]**
(4) Pull out the LAMP UNIT.

NOTE :

- Do not leave the LAMP COVER removed for long time to prevent dirt and dust form covering the lens.
- Make sure that the LAMP COVER is completely installed.

3.1.2.2 REMOVING THE BODY COVER (Fig.3)

(1) Remove the 9 screws **[C]**.
(2) Remove the 5 screws **[E]**.
(3) Remove the BODY COVER.

NOTE :

- Do not leave the BODY COVER removed for long time to prevent soiling from dust.

3.1.2.3 REMOVING THE MAIN UNIT (Fig.3)

- Remove the LAMP COVER.
- Remove the BODY COVER.

(1) Remove the 4 screws **[F]**
(2) Remove the BODY BRACKET.
(3) Remove the 2 screws **[G]**
(4) The MAIN UNIT is pulled out to the back side.

CAUTION :

- **Except for confirmation of projection images on the screen and audio output through the speakers, the removed MAIN UNIT is still workable in the same state as if it is still built-in the TV set. Therefore, the MAIN UNIT can be removed, if necessary, for board diagnosis, electric testing, etc. apart from confirmation of screen images and audio output. Do not leave the MAIN UNIT removed for long time to prevent soiling from dust.**
- **Because of the large size, at least 2 persons are recommended for removal and reassemble.**
- **When carrying the MAIN UNIT, use care not to drop, shock or shake it.**
- **Do not stain or damage the projection lens.**
- **Do not look directly at the light during service.**
- **Do not touch the lamp directly as it presents a burn hazard.**

NOTE :

- When not performing repair work, attach the cap on the lens to preventing dust from covering.
- When mounting to the set, make sure the front of the lens is in contact with the cushion on the set (body) side.
- Make sure that FRONT LED PWB connector is completely connect to the ANALOG PWB connector.
- When wire clamps are removed during work, use care to restore them precisely to their original positions. Performance can be affected if these are not returned to the original positions.

3.1.2.4 REMOVING THE AV TERMINAL BOARD (Fig.3)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.

(1) Remove the 3 screws **[H]**, 3 screws **[J]** and the 8 screws **[K]**.
(2) Remove the 2 hex screws **[L]**.
(3) Remove the nut attaching the ANTENNA TERMINAL.
(4) Remove the AV TERMINAL BOARD.

3.1.2.5 REMOVING THE POWER PWB (Fig.3)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.

(1) Remove the POWER CORD.
(2) Remove the 7 screws **[M]**.
(3) Remove the POWER PWB.

3.1.2.6 REMOVING THE TUNER PWB (Fig.3)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.

(1) Remove the 1 screw **[N]**.
(2) Remove the HANGER BRACKET with TUNER PWB.
(3) Remove the 3 screws **[P]**.
(4) Remove the TUNER PWB.

3.1.2.7 REMOVING THE ANALOG PWB (Fig.3)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
- Remove the POWER PWB and TUNER PWB.

(1) Remove the 4 screws **[Q]**.
(2) Remove the ANALOG PWB.

3.1.2.8 REMOVING THE DIGITAL PWB (Fig.3)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
- Remove the POWER PWB and TUNER PWB.
- Remove the ANALOG PWB.
  (1) Remove the 1 screw **[R]**.
  (2) Remove the DIGITAL PWB BRACKET with DIGITAL PWB and ATSC TUNER PWB.
  (3) Remove the 8 screws **[S]**.
  (4) Remove the DIGITAL PWB SHIELD COVER.
  (5) Remove the 9 screws **[T]**.
  (6) Remove the DIGITAL PWB.

CAUTION :

- **Make sure to perform the "SYSTEM SETTEING" , when DIGITAL PWB is replaced.**
- **Especially, because the value of F001 (DD) might been changed, go through next steps to confirm the setting value with the remote control unit.**
  (1) Set to "0 minutes" using the [SLEEP TIMER] key.
  (2) While "0 minutes" is displayed, press the [VIDEO STATUS] key and [DISPLAY] key simultaneously, then enter the SERVICE MODE.
  (3) Press [1] key to enter the ADJUSTMENT MODE.
  (4) Select < F001 >.
  (5) Confirm the value to "000", and set it to "000" when not "000".
  (6) Press [MUTING] key to memorize the data.
  (7) Press [BACK] key twice to exit the SERVICE MODE.

3.1.2.9 REMOVING THE ATSC TUNER COOLING FAN (Fig.3)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
- Remove the POWER PWB and TUNER PWB.
- Remove the ANALOG PWB.
  (1) Remove the 1 screw **[R]**.
  (2) Remove the DIGITAL PWB BRACKET with ATSC TUNER PWB.
  (3) Remove the 4 screws **[U]**.
  (4) Remove the ATSC TUNER COOLING FAN.

3.1.2.10 REMOVING THE ATSC TUNER PWB (Fig.3)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the AV TERMINAL BOARD.
- Remove the POWER PWB and TUNER PWB.
- Remove the ANALOG PWB.
- Remove the ATSC TUNER COOLING FAN.
  (1) Remove the 8 screws **[V]**.
  (2) Remove the ATSC TUNER SHIELD COVER.
  (3) Remove the 5 screws **[W]**.
  (4) Remove the ATSC TUNER PWB.

3.1.2.11 REMOVING THE SD CARD PWB (Fig.3)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
  (1) Remove the 2 screws **[X]**.
  (2) Remove the SD CARD BRACKET with the SD CARD PWB.
  (3) Remove the 2 screws **[Y]**.
  (4) Remove the SD CARD PWB.

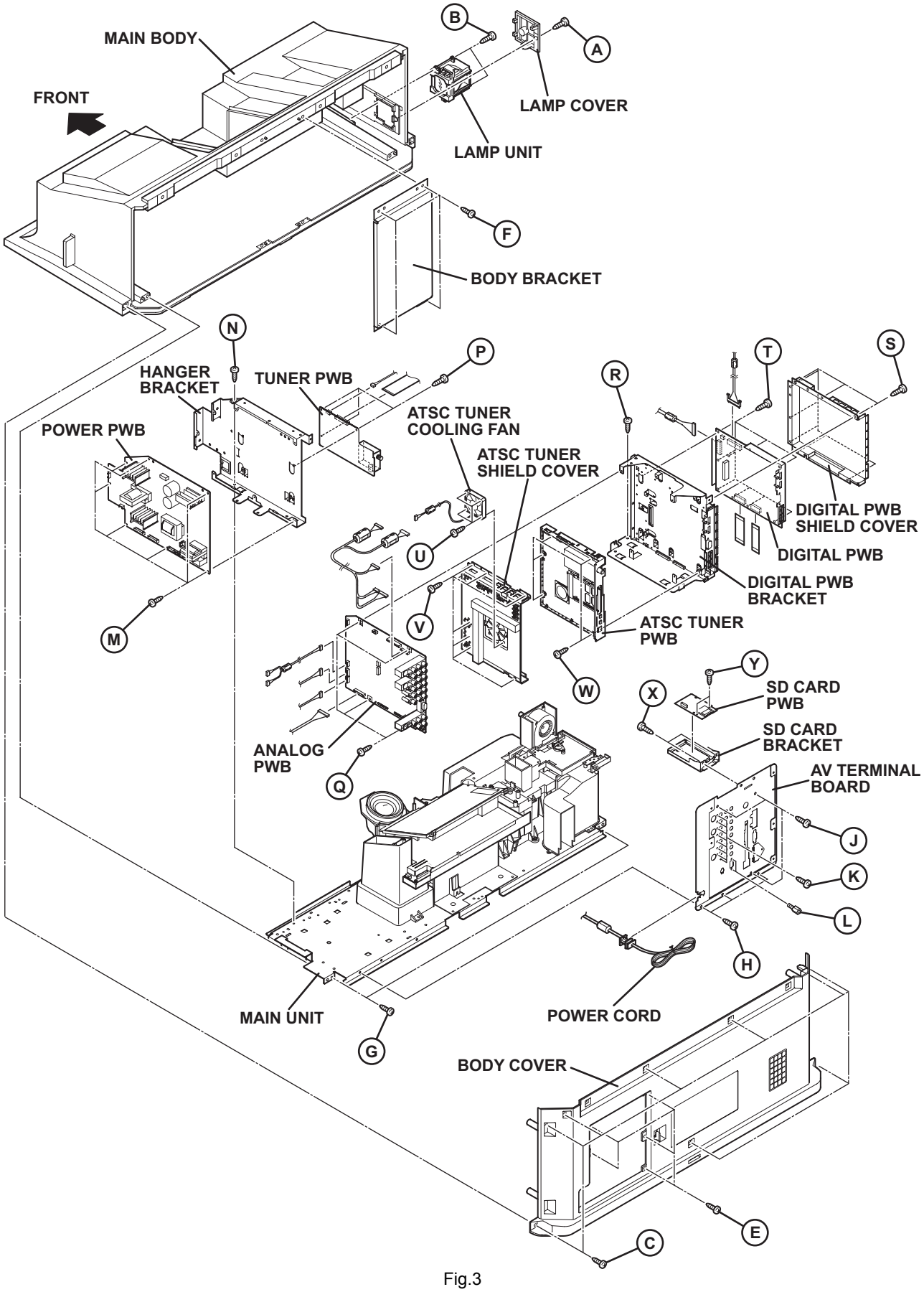

MAIN BODY
FRONT
B
A
LAMP COVER
LAMP UNIT
F
BODY BRACKET
N
HANGER BRACKET
TUNER PWB
P
POWER PWB
ATSC TUNER COOLING FAN
ATSC TUNER SHIELD COVER
R
T
S
DIGITAL PWB SHIELD COVER
DIGITAL PWB
DIGITAL PWB BRACKET
U
V
M
ATSC TUNER PWB
W
Y
X
SD CARD PWB
SD CARD BRACKET
ANALOG PWB
Q
AV TERMINAL BOARD
J
K
L
H
MAIN UNIT
G
POWER CORD
BODY COVER
E
C

Fig.3

3.1.2.12 REMOVING THE LAMP COVER SW PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
  (1) Remove the 2 screws **[A]**.
  (2) Remove the LAMP COVER SW BRACKET with LAMP COVER SW PWB.
  (3) Remove the 1 screw **[B]**.
  (4) Remove the LAMP COVER SW PWB.

3.1.2.13 REMOVING THE TERMOSTAT (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
  (1) Remove the 2 screws **[C]**.
  (2) Remove the THERMOSTAT.

3.1.2.14 REMOVING THE LAMP FAN DUCT (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the THERMOSTAT.
  (1) Remove the 5 screws **[D]**.
  (2) Remove the LAMP FAN DUCT.

3.1.2.15 REMOVING THE LAMP COOLING FAN -1 (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the LAMP FAN DUCT.
  (1) Remove the 2 screws **[E]**.
  (2) Remove the COOLING FAN BRACKET by pulling transversally.
  (3) Remove the 2 screws **[F]**.
  (4) Remove the LAMP COOLING FAN-1.

3.1.2.16 REMOVING THE LAMP COOLING FAN -2 (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the LAMP FAN DUCT.
- Remove the COOLING FAN BRACKET.
  (1) Remove the 2 screws **[G]**.
  (2) Remove the LAMP COOLING FAN -2.

3.1.2.17 REMOVING THE LAMP BALLAST BLOCK (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
  (1) Remove the 2 screws **[H]**.
  (2) Remove the LAMP BALLAST UNIT.
  (3) Remove the 1 screw **[J]**.
  (4) Remove the LAMP BALLAST BRACKET.

3.1.2.18 REMOVING THE IRIS PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
  (1) Remove the 2 screws **[K]**.
  (2) Remove the IRIS PWB.

3.1.2.19 REMOVING THE REMOCON PWB(Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
  (1) Remove the 1 screw **[L]**.
  (2) Remove the REMOCON PWB.

3.1.2.20 REMOVING THE OPTICAL / DRIVE ASS'Y (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the LAMP FAN DUCT.
  (1) Remove the 7 screws **[M]**, 6 screws **[N]** and 1 screw **[P]**.
  (2) Remove the OPTICAL / DRIVE ASS'Y.
    - OPTICAL BLOCK (D-ILA device, PBS, Field lens, Integrater, Mirror etc.)
    - PROJECTION LENS
    - Optical base
    - DRIVE PWB
    - IRIS PWB
    - TOP DUCT
    - SHIELD COVER

NOTE :

- The OPTICAL / DRIVE ASS'Y contains precision optical components.
- Handle carefully and avoid imparting strong shock.
- OPTICAL / DRIVE ASS'Y construction
- When not performing repair work, attach the cap on the lens to preventing dust from covering.
- When mounting to the set, make sure the front of the lens side is in contact with the cushion on the body side.
- Do not leave the OPTICAL / DRIVE ASS'Y removed for long time to prevent soiling from dust.

3.1.2.21 REMOVING THE DRIVE PWB (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
  (1) Slide the TOP DUCT PLATE and remove it.
  (2) Remove the 1 screw **[Q]** and the 1 screw **[R]**.
  (3) Remove the TOP DUCT.
  (4) Remove the SHIELD TOP CASE.
  (5) Remove the 3 screws **[S]** and the 1 screw **[T]**.
  (6) Remove the DRIVE PWB.

3.1.2.22 REMOVING THE OPTICAL BLOCK COOLING FAN (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
- Remove the LAMP FAN DUCT.
- Remove the OPTICAL / DRIVE ASS'Y
  (1) Remove the 2 screws **[U]**.
  (2) Remove the SIROCCO TOP CASE.
  (3) Remove the 2 screws **[V]**.
  (4) Remove the OPTICAL BLOCK COOLING FAN.

3.1.2.23 REMOVING THE PROJECTION LENS (Fig.4)

- Remove the LAMP COVER.
- Remove the BODY COVER.
- Remove the BODY BRACKET.
- Remove the MAIN UNIT.
  (1) Remove the 4 screws **[W]**.
  (2) Remove the PROJECTION LENS.

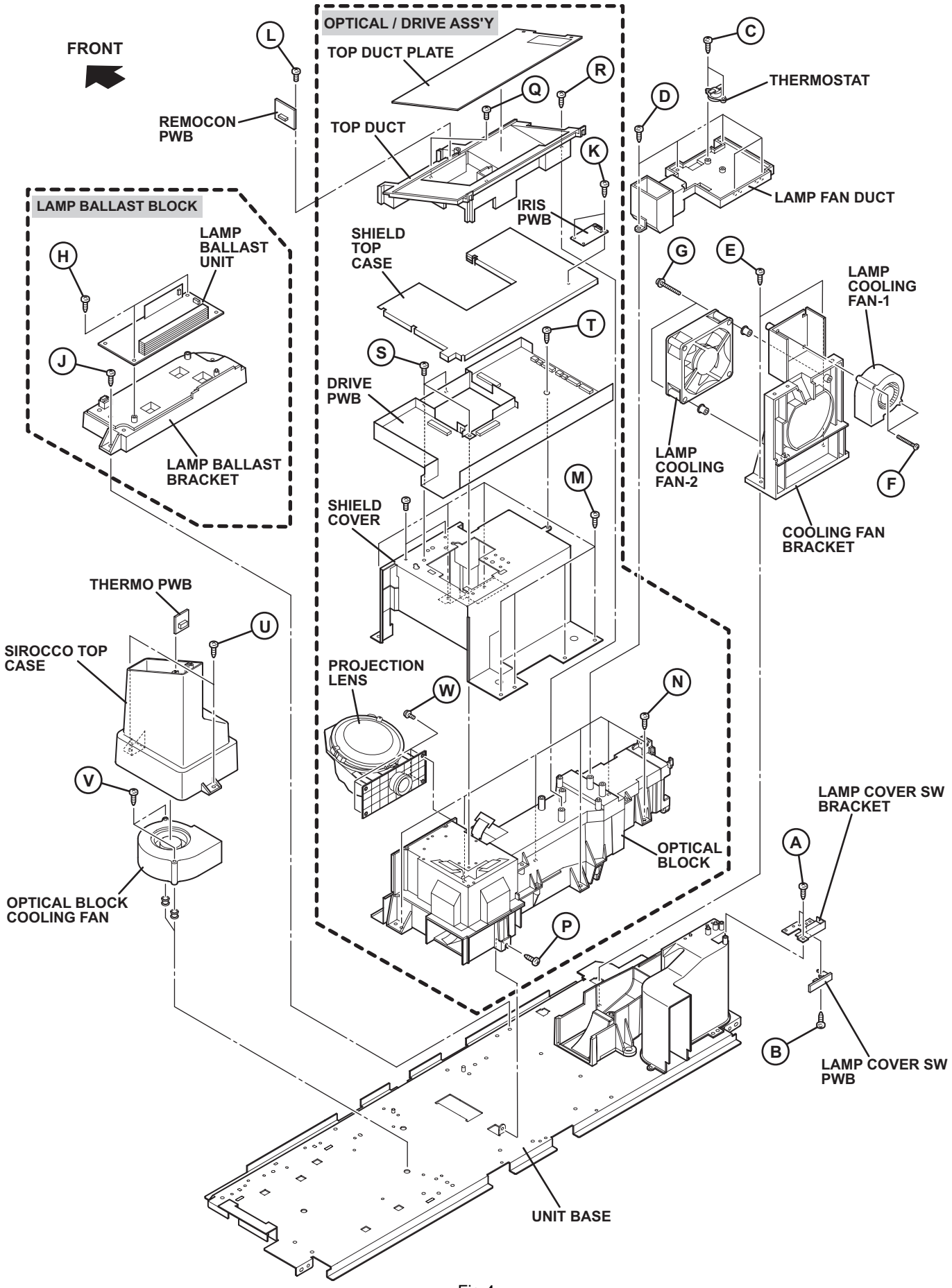

FRONT
OPTICAL / DRIVE ASS'Y
TOP DUCT PLATE
TOP DUCT
REMOCON PWB
THERMOSTAT
LAMP FAN DUCT
IRIS PWB
LAMP BALLAST BLOCK
LAMP BALLAST UNIT
SHIELD TOP CASE
LAMP COOLING FAN-1
LAMP COOLING FAN-2
DRIVE PWB
LAMP BALLAST BRACKET
SHIELD COVER
COOLING FAN BRACKET
THERMO PWB
SIROCCO TOP CASE
PROJECTION LENS
OPTICAL BLOCK
OPTICAL BLOCK COOLING FAN
LAMP COVER SW BRACKET
LAMP COVER SW PWB
UNIT BASE
L
C
R
Q
D
K
H
E
G
T
S
J
M
U
W
N
V
P
A
B
F

Fig.4

3.2 MEMORY IC REPLACEMENT

- This model uses the memory IC.
- This memory IC stores data for proper operation of the video and drive circuits.
- When replacing, be sure to use an IC containing this (initial value) data.

3.2.1 MEMORY IC TABLE

Simbol	Number of pins	Mounting PWB	Main content of data
IC3753	8-pin	DRIVE PWB	Adjustment and setting data (GAMMA, SHADING, etc.) of IC3701(DRIVE CPU) are memorized.
IC7201	48-pin	DIGITAL PWB	Progaram(Video process) of IC6001(System CPU) is memorized.
IC7602	8-pin	DIGITAL PWB	Setting value of IC7601(MAIN CPU) is memorized.

3.2.2 MEMORY IC REPLACEMENT PROCEDURE

1. Power off
Switch off the power and disconnect the power plug from the AC outlet.

2. Replace the memory IC
Be sure to use the memory IC written with the initial setting values.

3. Power on
Connect the power plug to the AC outlet and switch on the power.

4. Receiving channel setting
Refer to the OPERATING INSTRUCTIONS and set the receive channels (Channels Preset) as described.

5. User setting
Check the user setting items according to the given in page later. Where these do not agree, refer to the OPERATING INSTRUCTIONS and set the items as described.

6. SERVICE MODE setting
Verify what to set in the SERVICE MODE, and set whatever is necessary (Fig.1). Refer to the SERVICE ADJUSTMENT for setting.

3.2.3 SERVICE MODE SETTING

■SERVICE MODE SCREEN

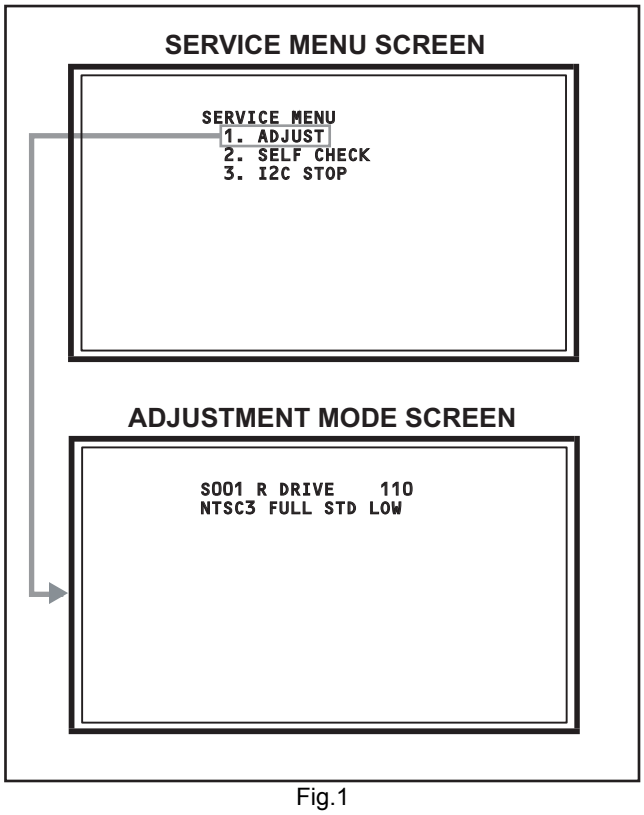


Fig.1

■SETTING ITEM

Setting items	Settings	Item No.
Video system setting	Adjust	S001 - S009
Audio system setting	Adjust	T001 - T003
Main CPU system setting	Fixed	M001 - M224
Drive system setting	Fixed	F001 - F002
(NOT USED)	Fixed	D001
(NOT USED)	Fixed	Z001

3.2.4 SETTINGS OF FACTORY SHIPMENT

3.2.4.1 BUTTON OPERATION

Setting item	Setting position
POWER	Off
CHANNEL	CABLE-02
VOLUME	10
INPUT	TV

3.2.4.2 REMOTE CONTROL DIRECT OPERATION

Setting item		Setting position
INPUT		TV
CHANNEL		CABLE-02
VOLUME		10
MUTING		OFF
DISPLAY		OFF
ASPECT	NTSC, SD	PANORAMA
	ATSC(525i, 525p)	PANORAMA ZOOM
	ATSC(750p, 1125i), HD, 1125p	FULL
	PC	REGULAR
SLEEP TIMER		OFF
THEATER PRO		OFF
NATURAL CINEMA		AUTO
C.C.		OFF
MTS		STEREO
TWIN SOURCE	LEFT SIDE	CABLE-02
	RIGHT SIDE	INPUT-1
SOUND	A.H.S.+	OFF
	VOICE ENHANCEMENT	OFF
	SMART SOUND	OFF
	MaxxBass	OFF
VIDEO STATUS		DYNAMIC

3.2.4.3 REMOTE CONTROL MENU OPERATION

■ PICTURE ADJUST

Customers can adjust the picture setting of menu screen as their own like but the picture standard value during factory shipment is as below.

[NTSC MODE]

Setting item	DYNAMIC	STANDARD	GAME	THEATER
TINT	-02	00	00	00
COLOR	+08	00	00	00
PICTURE	00	00	-10	00
BRIGHT	00	00	00	00
DETAIL	+06	00	00	00
IRIS	+10	00	00	-04
COLOR TEMPERATURE	HIGH	LOW	HIGH	HIGH
COLOR MANAGEMENT	ON	ON	ON	ON
DYNAMIC GAMMA	ON	ON	ON	ON
ADVANCED SMART PICTURE	OFF	ON	ON	ON
DIGITAL VNR	AUTO	AUTO	AUTO	AUTO
MPEG NR	OFF	OFF	OFF	OFF

[HD MODE]

Setting item	DYNAMIC	STANDARD	GAME	THEATER
TINT	-02	00	00	00
COLOR	+08	00	00	00
PICTURE	+03	00	-10	00
BRIGHT	-05	00	00	00
DETAIL	+12	00	00	00
IRIS	+10	00	00	-04
COLOR TEMPERATURE	HIGH	LOW	HIGH	LOW
COLOR MANAGEMENT	ON	ON	ON	ON
DYNAMIC GAMMA	ON	ON	ON	ON
ADVANCED SMART PICTURE	OFF	ON	ON	ON
DIGITAL VNR	AUTO	AUTO	AUTO	AUTO
MPEG NR	OFF	OFF	OFF	OFF

■ **SOUND ADJUST**

Setting item	Setting position
BASS	00
TREBLE	00
BALANCE	00
TURN ON VOLUME	CURRENT
VOLUME LIMIT	50

■ **CLOCK / TIMERS**

Setting item	Setting position
ON / OFF TIMER	NO

■ **INITIAL SETUP**

Setting item	Setting position
VIDEO-1 MONITOR OUT	OFF
TV SPEAKER	ON
AUDIO OUT	FIX
DIGITAL-IN	AUTO
DIGITAL-IN1 AUDIO	AUTO
CENTER CH INPUT	OFF
NOISE MUTING	ON
FRONT PANEL LOCK	OFF
V1 SMART INPUT	OFF
VIDEO INPUT LABEL	All blank
POSITION ADJUSTMENT	Center
POWER INDICATOR	HIGH
LANGUAGE	ENG.
CLOSED CAPTION	OFF
AUTO SHUT OFF	OFF
XDS ID	ON
AUTO TUNER SETUP	Unnecessary to set
V-CHIP	OFF

3.3 REPLACEMENT OF CHIP COMPONENT

3.3.1 CAUTIONS

(1) Avoid heating for more than 3 seconds.
(2) Do not rub the electrodes and the resist parts of the pattern.
(3) When removing a chip part, melt the solder adequately.
(4) Do not reuse a chip part after removing it.

3.3.2 SOLDERING IRON

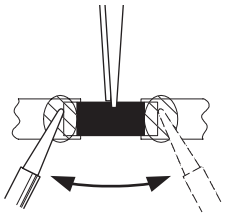
(1) Use a high insulation soldering iron with a thin pointed end of it.
(2) A 30w soldering iron is recommended for easily removing parts.

3.3.3 REPLACEMENT STEPS

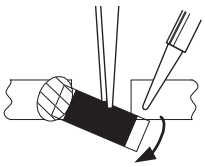
1. How to remove Chip parts

[Resistors, capacitors, etc.]

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.



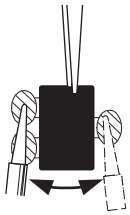
(2) Shift with the tweezers and remove the chip part.



[Transistors, diodes, variable resistors, etc.]

(1) Apply extra solder to each lead.

(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

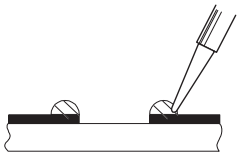


NOTE :
After removing the part, remove remaining solder from the pattern.

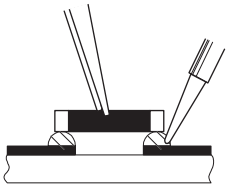
2. How to install Chip parts

[Resistors, capacitors, etc.]

(1) Apply solder to the pattern as indicated in the figure.

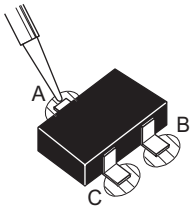


(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

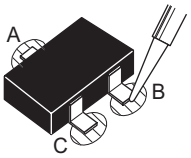


[Transistors, diodes, variable resistors, etc.]

(1) Apply solder to the pattern as indicated in the figure.
(2) Grasp the chip part with tweezers and place it on the solder.
(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



SECTION 4
ADJUSTMENT

4.1 ADJUSTMENT PREPARATION

(1) **There are 2 ways of adjusting this TV : One is with the REMOTE CONTROL UNIT and the other is the conventional method using adjustment parts and components.**
(2) **The adjustment using the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**
(3) Make sure that connection is correctly made AC to AC power source.
(4) Turn on the power of the TV and measuring instruments for warning up for at least 30 minutes before starting adjustments.
(5) If the receive or input signal is not specified, use the most appropriate signal for adjustment.
(6) Never touch the parts (such as variable resistors, transformers and condensers) not shown in the adjustment items of this service adjustment.

4.2 PRESET SETTING BEFORE ADJUSTMENTS

Unless otherwise specified in the adjustment items, preset the following functions with the REMOTE CONTROL UNIT.

Setting item	Settings
VIDEO STATUS	STANDARD
Picture adjustments	00
COLOR TEMPERATURE	LOW
COLOR MANAGEMENT	ON
DYNAMIC GAMMA	ON
ADVANCED SMART PICTURE	OFF
DIGITAL VNR	OFF
MPEG NR	OFF
NATURAL CINEMA	AUTO
Sound adjustments	00
A.H.S.+	OFF
MaxxBass	OFF
SMART SOUND	OFF
ASPECT	FULL

4.3 MEASURING INSTRUMENT AND FIXTURES

- Oscilloscope
- Signal generator (Pattern generator) [NTSC / 525i / 525p / 750p / 1125i]
- TV audio multiplex signal generator
- Remote control unit

4.4 ADJUSTMENT ITEMS

■ **FOCUS**
- LENS FOCUS adjustment

■ **DRIVE CIRCUIT**
- DRIVE CONVERGENCE adjustment
- DRIVE CENTER POSITION adjustment

■ **VIDEO CIRCUIT**
- WHITE BALANCE (HIGHLIGHT) adjustment

■ **MTS CIRCUIT**
- MTS INPUT LEVEL adjustment
- MTS SEPARATION adjustment

4.5 BASIC OPERATION OF SERVICE MODE

4.5.1 HOW TO ENTER THE SERVICE MODE

(1) Set to **"0 minutes"** using the **[SLEEP TIMER]** key.

(2) While **"0 minutes"** is displayed, press the **[VIDEO STATUS]** key and **[DISPLAY]** key simultaneously, then enter the SERVICE MODE (Fig.1)

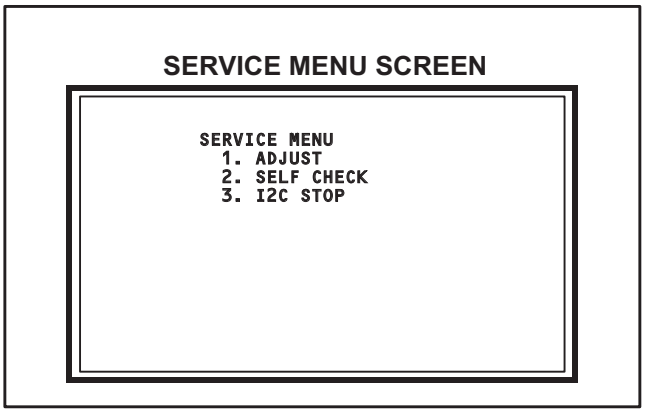


Fig.1

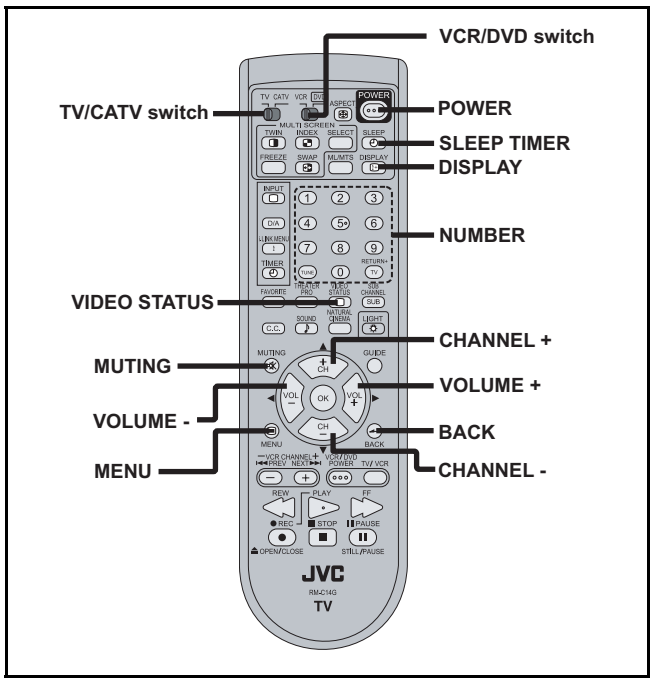
NOTE:

- Before entering the SERVICE MODE, confirm that the setting of **TV/CATV** switch of the REMOTE CONTROL UNIT is at the "TV" side and the setting of **VCR/DVD** switch is at the "**VCR**" side. If the switches have not been properly set, you cannot enter the SERVICE MODE.
- When a number key other than the **[1]** or **[9]** keys is pressed in the SERVICE MENU SCREEN, the other relevant screen may be displayed.
  This is not used in the adjustment procedure. Press the **[MENU]** key to return to the SERVICE MENU SCREEN.

4.5.2 HOW TO EXIT THE SERVICE MODE

Press the **[BACK]** key to exit the Service mode.

4.5.3 SERVICE MODE SELECT KEY LOCATION



4.5.4 ADJUSTMENT MODE

This mode is used to adjust the VIDEO CIRCUIT and the MTS CIRCUIT.

4.5.4.1 HOW TO ENTER THE ADJUSTMENT MODE

When the SERVICE MENU SCREEN of SERVICE MODE is displayed, press **[1]** key to enter the **ADJUSTMENT MODE (Fig.2)**.

4.5.4.2 DESCRIPTION OF STATUS DISPLAY OF ADJUSTMENT MODE

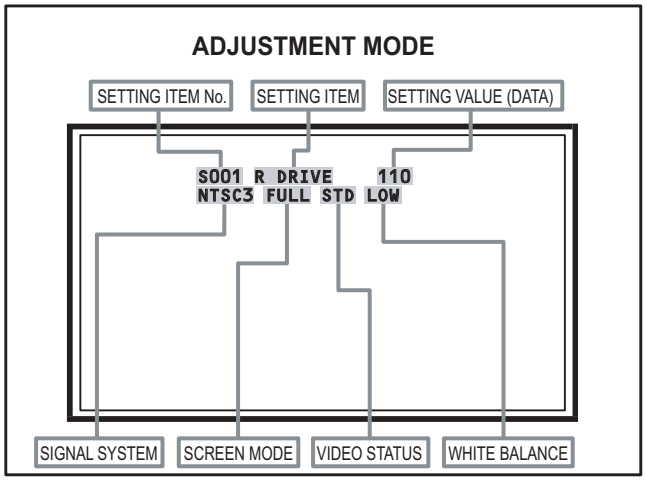


Fig.2

(1) SIGNAL SYSTEM

The signal displayed on the screen is displayed.

NTSC3	: 525i (Composite / S-video input)
525I	: 525i (Component input)
525P	: 525p
1125I6	: 1125i
750P6	: 750p
PCVGA	: PC (VGA)
PCXGA	: PC (XGA)
PCNG	: PC (except VGA/XGA)
H525I	: HDMI 525i
H525P	: HDMI 525p
H125I6	: HDMI 1125i
H125P6	: HDMI 1125p
H750P6	: HDMI 750p
D525I	: ATSC 525i
D525P	: ATSC 525p
D125I6	: ATSC 1125i
D750P	: ATSC 750p

(2) SCREEN MODE

State of the SCREEN SIZE or MULTI PICTURE is displayed.

SINGLE SCREEN

FULL	: FULL
1609	: CINEMA, CINEMA ZOOM
PANO	: PANORAMA, PANORAMA ZOOM
REGU	: REGULAR, SLIM

MULTI SCREEN

M2	: TWIN, FREEZE screen
M12	: INDEX screen

(3) VIDEO STATUS

STD : STANDARD
DYN : DYNAMIC
TH : THEATER
GAME : GAME

(4) WHITE BALANCE

HIGH : HIGH
LOW : LOW

(5) SETTING ITEM NAME

Setting item name are displayed. The setting item numbers to be displayed are listed below.

Item No.	Setting item
S001 - S009	Video system setting
T001 - T003	Audio system setting
M001 - M224	Main CPU system setting
F001 - F002	Drive system setting
D001	(NOT USED)
Z001	(NOT USED)

(6) SETTING ITEM NO.

Setting item numbers are displayed. For the setting item names to be displayed, refer to "Initial setting value of adjustment mode".

(7) SETTING VALUE (DATA)

The SETTING VALUE is displayed.

4.5.4.3 CHANGE AND MEMORY OF SETTING VALUE

■SELECTION OF SETTING ITEM

- **[CH+]** / **[CH-]** key.
  Change the setting items up/ down.

S001... ↔ T001... ↔ M001... ↔ F001... ↔ D001... ↔ Z001...

- **[SLEEP TIMER]** key.
  Switches to the next items.

S001 → T001 → M001... → F001... → D001 → Z001

■CHANGE OF SETTING VALUE (DATA)

- **[VOL+]** / **[VOL-]** key.
  Change the setting values up/down.

■MEMORY OF SETTING VALUE (DATA)

Changed setting value is memorized by pressing **[MUTING]** key.

4.5.5 RGB BOX PATTERN MODE

This mode is used to adjust the DRIVE CIRCUIT.

4.5.5.1 HOW TO ENTER THE RGB BOX PATTERN MODE

When the SERVICE MENU SCREEN of SERVICE MODE is displayed, press **[9]** key to enter the **RGB BOX PATTERN MODE (Fig3)**.

4.5.5.2 DESCRIPTION OF STATUS DISPLAY OF RGB BOX PATTERN MODE

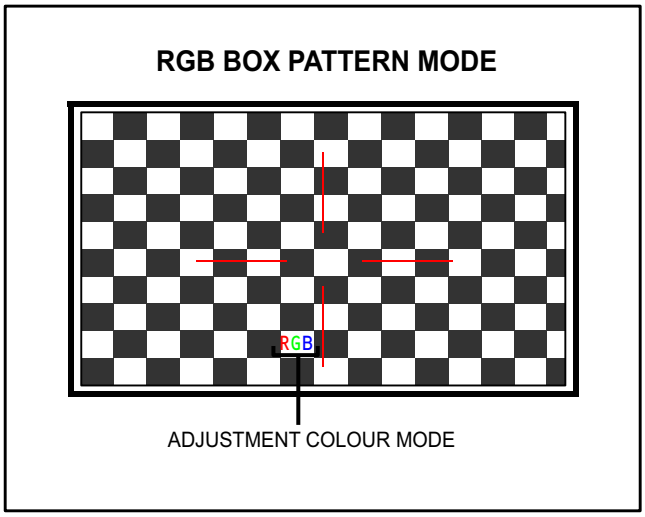


Fig.3

(1) RGB BOX PATTERN

The checkered pattern is displayed. White is a synthesis of RGB.

(2) ADJUSTMENT COLOR MODE

Presently selected ADJUSTMENT COLOR MODE is displayed.

■SELECTION OF SETTING ITEM

- **[CH+]** / **[CH-]** key.
  Move the selected RGB BOX PATTERN up/ down pixel by pixel.

- **[VOL+]** / **[VOL-]** key.
  Move the selected RGB BOX PATTERN left/ right pixel by pixel.

- **[SLEEP TIMER]** key.
  Adjusts the data reset.

- **[DISPLAY]** key.
  Adjusts the selected COLOR BOX PATTERN.

R → B → RGB

- **[BACK]** key.
  Returns to the SERVICE MENU SCREEN from the RGB BOX PATTERN MODE.

■MEMORY OF SETTING VALUE (DATA)

With the RGB BOX PATTERN MODE, the changed date is written in the MEMORY instantly.

4.6 INITIAL SETTING VALUES IN THE SERVICE MODE

- Perform fine-tuning based on the "initial values" using the remote control when in the Service mode.
- The "initial values" serve only as an indication rough standard and therefore the values with which optimal display can be achieved may be different from the default values. But, don't change the values that are not written in "ADJUSTMENT PROCEDURE". They are fixed values.

4.6.1 VIDEO SYSTEM SETTING

Item No.	Item	Variable range	Setting value
S001	R DRIVE	000 - 255	110
S002	G DRIVE	000 - 255	138
S003	B DRIVE	000 - 255	127
S004	RESREV	000 - 255	000
S005	RESREV	000 - 255	002
S006	RESREV	000 - 255	002
S007	RESREV	000 - 255	002
S008	RESREV	000 - 255	002
S009	RESREV	000 - 255	002

4.6.2 AUDIO SYSTEM SETTING

Item No.	Item	Variable range	Setting value
T001	INPLEVEL	000 - 015	007
T002	LOWSEPA	000 - 063	028
T003	HIGHSEPA	000 - 063	018

4.6.3 MAIN CPU SYSTEM SETTING (Fixed values)

Item No.	Item	Variable range	Setting value
M001	1E00	00 - FF	00
M002	1E01	00 - FF	00
M003	1E02	00 - FF	0A
M004	1E03	00 - FF	20
M005	1E04	00 - FF	10
M006	1E05	00 - FF	00
M007	1E06	00 - FF	00
M008	1E07	00 - FF	00
M009	1E08	00 - FF	00
M010	1E09	00 - FF	00
M011	1E0A	00 - FF	01
M012	1E0B	00 - FF	00
M013	1E0C	00 - FF	01
M014	1E0D	00 - FF	00
M015	1E0E	00 - FF	00
M016	1E0F	00 - FF	00
M017	1E10	00 - FF	01
M018	1E11	00 - FF	00
M019	1E12	00 - FF	00
M020	1E13	00 - FF	01
M021	1E14	00 - FF	01
M022	1E15	00 - FF	00
M023	1E16	00 - FF	00
M024	1E17	00 - FF	00
M025	1E18	00 - FF	00
M026	1E19	00 - FF	00
M027	1E1A	00 - FF	00
M028	1E1B	00 - FF	00
M029	1E1C	00 - FF	00
M030	1E1D	00 - FF	00
M031	1E1E	00 - FF	00
M032	1E1F	00 - FF	00
M033	1E20	00 - FF	00
M034	1E21	00 - FF	00
M035	1E22	00 - FF	00
M036	1E23	00 - FF	00
M037	1E24	00 - FF	00
M038	1E25	00 - FF	00
M039	1E26	00 - FF	00
M040	1E27	00 - FF	00
M041	1E28	00 - FF	00
M042	1E29	00 - FF	00
M043	1E2A	00 - FF	00
M044	1E2B	00 - FF	00
M045	1E2C	00 - FF	00
M046	1E2D	00 - FF	00
M047	1E2E	00 - FF	00
M048	1E2F	00 - FF	00
M049	1E30	00 - FF	00
M050	1E31	00 - FF	00
M051	1E32	00 - FF	00
M052	1E33	00 - FF	00
M053	1E34	00 - FF	00
M054	1E35	00 - FF	00
M055	1E36	00 - FF	02
M056	1E37	00 - FF	00
M057	1E38	00 - FF	01
M058	1E39	00 - FF	02
M059	1E3A	00 - FF	10
M060	1E3B	00 - FF	83
M061	1E3C	00 - FF	00
M062	1E3D	00 - FF	00
M063	1E3E	00 - FF	00
M064	1E3F	00 - FF	00
M065	1E40	00 - FF	00
M066	1E41	00 - FF	00
M067	1E42	00 - FF	00
M068	1E43	00 - FF	03
M069	1E44	00 - FF	03
M070	1E45	00 - FF	03
M071	1E46	00 - FF	3F
M072	1E47	00 - FF	01

Item No.	Item	Variable range	Setting value
M073	1E48	00 - FF	00
M074	1E49	00 - FF	00
M075	1E4A	00 - FF	00
M076	1E4B	00 - FF	00
M077	1E4C	00 - FF	00
M078	1E4D	00 - FF	00
M079	1E4E	00 - FF	00
M080	1E4F	00 - FF	00
M081	1E50	00 - FF	00
M082	1E51	00 - FF	00
M083	1E52	00 - FF	00
M084	1E53	00 - FF	00
M085	1E54	00 - FF	00
M086	1E55	00 - FF	00
M087	1E56	00 - FF	00
M088	1E57	00 - FF	00
M089	1E58	00 - FF	00
M090	1E59	00 - FF	00
M091	1E5A	00 - FF	00
M092	1E5B	00 - FF	00
M093	1E5C	00 - FF	00
M094	1E5D	00 - FF	00
M095	1E5E	00 - FF	00
M096	1E5F	00 - FF	00
M097	1E60	00 - FF	00
M098	1E61	00 - FF	00
M099	1E62	00 - FF	00
M100	1E63	00 - FF	00
M101	1E64	00 - FF	00
M102	1E65	00 - FF	00
M103	1E66	00 - FF	00
M104	1E67	00 - FF	00
M105	1E68	00 - FF	04
M106	1E69	00 - FF	03
M107	1E6A	00 - FF	02
M108	1E6B	00 - FF	00
M109	1E6C	00 - FF	00
M110	1E6D	00 - FF	00
M111	1E6E	00 - FF	00
M112	1E6F	00 - FF	00
M113	1E70	00 - FF	00
M114	1E71	00 - FF	00
M115	1E72	00 - FF	00
M116	1E73	00 - FF	00
M117	1E74	00 - FF	00
M118	1E75	00 - FF	00
M119	1E76	00 - FF	00
M120	1E77	00 - FF	00
M121	1E78	00 - FF	03
M122	1E79	00 - FF	00

Item No.	Item	Variable range	Setting value
M123	1E7A	00 - FF	00
M124	1E7B	00 - FF	00
M125	1E7C	00 - FF	00
M126	1E7D	00 - FF	00
M127	1E7E	00 - FF	01
M128	1E7F	00 - FF	00
M129	1E80	00 - FF	01
M130	1E81	00 - FF	00
M131	1E82	00 - FF	01
M132	1E83	00 - FF	00
M133	1E84	00 - FF	00
M134	1E85	00 - FF	00
M135	1E86	00 - FF	00
M136	1E87	00 - FF	00
M137	1E88	00 - FF	00
M138	1E89	00 - FF	00
M139	1E8A	00 - FF	00
M140	1E8B	00 - FF	00
M141	1E8C	00 - FF	00
M142	1E8D	00 - FF	00
M143	1E8E	00 - FF	00
M144	1E8F	00 - FF	00
M145	1E90	00 - FF	00
M146	1E91	00 - FF	00
M147	1E92	00 - FF	00
M148	1E93	00 - FF	00
M149	1E94	00 - FF	00
M150	1E95	00 - FF	00
M151	1E96	00 - FF	00
M152	1E97	00 - FF	00
M153	1E98	00 - FF	00
M154	1E99	00 - FF	00
M155	1E9A	00 - FF	01
M156	1E9B	00 - FF	00
M157	1E9C	00 - FF	03
M158	1E9D	00 - FF	00
M159	1E9E	00 - FF	00
M160	1E9F	00 - FF	00
M161	1EA0	00 - FF	00
M162	1EA1	00 - FF	00
M163	1EA2	00 - FF	01
M164	1EA3	00 - FF	00
M165	1EA4	00 - FF	00
M166	1EA5	00 - FF	00
M167	1EA6	00 - FF	00
M168	1EA7	00 - FF	00
M169	1EA8	00 - FF	00
M170	1EA9	00 - FF	00
M171	1EAA	00 - FF	00
M172	1EAB	00 - FF	00

Item No.	Item	Variable range	Setting value
M173	1EAC	00 - FF	0A
M174	1EAD	00 - FF	00
M175	1EAE	00 - FF	00
M176	1EAF	00 - FF	00
M177	1EB0	00 - FF	0A
M178	1EB1	00 - FF	00
M179	1EB2	00 - FF	01
M180	1EB3	00 - FF	00
M181	1EB4	00 - FF	00
M182	1EB5	00 - FF	00
M183	1EB6	00 - FF	00
M184	1EB7	00 - FF	00
M185	1EB8	00 - FF	00
M186	1EB9	00 - FF	00
M187	1EBA	00 - FF	00
M188	1EBB	00 - FF	00
M189	1EBC	00 - FF	00
M190	1EBD	00 - FF	00
M191	1EBE	00 - FF	00
M192	1EBF	00 - FF	00
M193	1EC0	00 - FF	00
M194	1EC1	00 - FF	00
M195	1EC2	00 - FF	01
M196	1EC3	00 - FF	00
M197	1EC4	00 - FF	00
M198	1EC5	00 - FF	00
M199	1EC6	00 - FF	00
M200	1EC7	00 - FF	00
M201	1EC8	00 - FF	00
M202	1EC9	00 - FF	00
M203	1ECA	00 - FF	00
M204	1ECB	00 - FF	00

Item No.	Item	Variable range	Setting value
M205	1ECC	00 - FF	02
M206	1ECD	00 - FF	00
M207	1ECE	00 - FF	00
M208	1ECF	00 - FF	00
M209	1ED0	00 - FF	10
M210	1ED1	00 - FF	00
M211	1ED2	00 - FF	00
M212	1ED3	00 - FF	00
M213	1ED4	00 - FF	00
M214	1ED5	00 - FF	00
M215	1ED6	00 - FF	00
M216	1ED7	00 - FF	00
M217	1ED8	00 - FF	00
M218	1ED9	00 - FF	00
M219	1EDA	00 - FF	00
M220	1EDB	00 - FF	00
M221	1EDC	00 - FF	00
M222	1EDD	00 - FF	00
M223	1EDE	00 - FF	00
M224	1EDF	00 - FF	00

4.6.4 DRIVE SYSTEM SETTING (Fixed values)

Item No.	Item	Variable range	Setting value
F001	DD	000 - 001	000
F002	RAM REF	000 - 001	000

4.6.5 NOT USED (Fixed values)

Item No.	Item	Variable range	Setting value
D001	RESREV	000 - 255	002

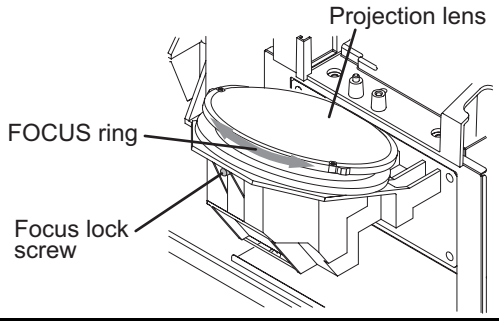
4.6.6 NOT USED (Fixed values)

Item No.	Item	Variable range	Setting value
Z001	RESREV	000 - 255	002

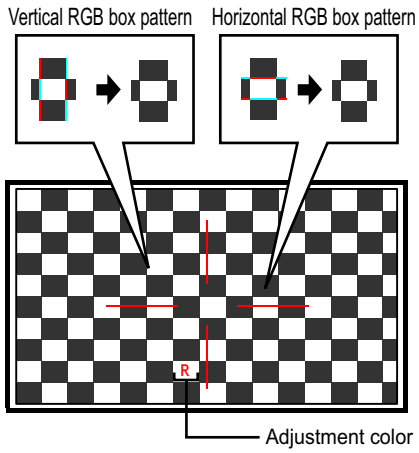
4.7 ADJUSTMENT PROCEDURE

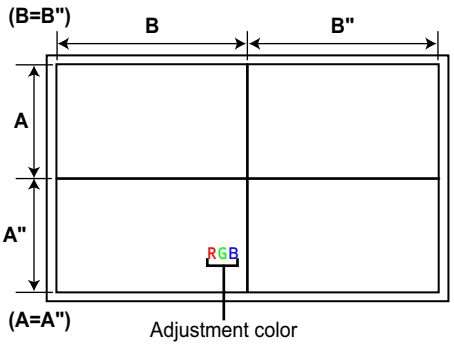
4.7.1 FOCUS

Item	Measuring instrument	Test point	Adjustment part	Description
LENS FOCUS	Hexagon wrench (2.5mm)		FOCUS ring [PROJECTION LENS]	(1) Remove the SPEAKER GRILL and CENTER COVER. (2) Display the MENU screen. (3) Loosen the focus lock screw. (4) Adjust the **FOCUS ring** so that the center screen may become the best focus. (5) Fix the focus lock screw by using the Hexagon wrench. • On this occasion, hold the FOCUS ring with your left hand. (6) Confirm the whole focus of the best screen. (7) Install the CENTER COVER and SPEAKER GRILL.



4.7.2 DRIVE CIRCUIT

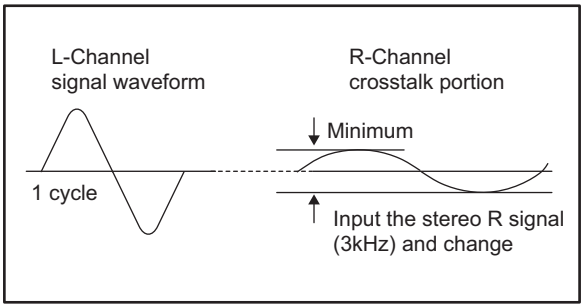
<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>DRIVE CONVERGENCE</td><td>Remote control unit</td><td></td><td>[9.RGB BOX PATTERN]</td><td>(1) Set to "0 minutes" using the [SLEEP TIMER] key.
(2) Press the [VIDEO STATUS] key and [DISPLAY] key simultaneously, to enter the SERVICE MODE.
(3) Press the [9] key, to select "RGB BOX PATTERN MODE" from the SERVICE MODE.
(4) Set the adjustment color mode to "R" to set the red color adjustment mode.
(5) At Horizontal RGB box pattern, adjust the top edge position as same or less than 0.5 pixel hight as green.
(6) At Vertical RGB box pattern, adjust the right edge position as same or less than 0.5 pixel hight as green.
(7) Set the adjustment color mode to "B" to set the blue color adjustment mode.
(8) At Horizontal RGB box pattern, adjust the top edge position as same or less than 0.5 pixel hight as green.
(9) At Vertical RGB box pattern, adjust the right edge position as same or less than 0.5 pixel hight as green.
(10) Check to see that the cross pattern is white. If the cross pattern is not white, repeat the step 4. to 9. as abobe.
NOTE:
• Green is fixed. (It can not be removed.)
• With this adjustment mode, the changed data is written in the MEMORY instantly.</td></tr>
<tr><td colspan="3"> 
</td></tr>
<tr><td>DRIVE CENTER POSITION</td><td>Remote control unit

Signal generator</td><td></td><td>[9.RGB BOX PATTERN]</td><td>(1) Receive a center cross (or crosshatch) pattern.
(2) Set to "0 minutes" using the [SLEEP TIMER] key.
(3) Press the [VIDEO STATUS] key and [DISPLAY] key simultaneously, to enter the SERVICE MODE.
(4) Press the [9] key, to select "RGB BOX PATTERN MODE" from the SERVICE MODE.
(5) Set the adjustment color mode to "RGB" to set the display position adjustment mode.
(6) Adjust the top and the bottom width to make A and A" even.
(7) Adjust the left and the right width to make B and B" even.
NOTE:
• With this adjustment mode, the changed data is written in the MEMORY instantly.</td></tr>
<tr><td colspan="3"> 
</td></tr>
</table>

4.7.3 VIDEO CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
WHITE BALANCE (HIGHLIGHT)	Remote control unit Signal generator		[1.ADJUST] S001: R DRIVE (Red drive) S002: G DRIVE (Green drive) S003: B DRIVE (Blue drive)	(1) Receive a NTSC 75% all white pattern. (2) Set "VIDEO STATUS" to **"STANDARD"**. (3) Set "ASPECT" to **"FULL"**. (4) Select "COLOR TEMPERATURE" to **"LOW"**. (5) Select **"1.ADJUST"** from the SERVICE MODE. (6) Adjust to keep one of **< S001 >** (Red drive), **< S002 >** (Green drive) or **< S003 >** (Blue drive) unchanged, then lower the other two so that the all-white screen is equally white throughout. **NOTE:** Set one or more of **< S001 >**, **< S002 >**, and **< S003 >** to **"138"**. (7) Check that white balance is properly tracked from low light to high light. If the white balance tracking is deviated, adjust to correct it. (8) Press the **[MUTING]** key to memoirze the set value.

4.7.4 MTS CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
MTS INPUT LEVEL	Remote control unit		[1.ADJUST] T001: INPLEVEL	(1) Receive any broadcast. (2) Select **"1.ADJUST"** from the SERVICE MODE. (3) Verify that the **< T001 >** (INPLEVEL) is set at its initial setting value. (4) Press the **[MUTING]** key to memorize the set value.
MTS SEPARATION	TV audio multiplex signal generator Oscilloscope Remote control unit	L OUT R OUT	[1.ADJUST] T002: LOWSEPA T003: HIGHSEPA	(1) Input the stereo L signal (300Hz) from the TV audio multiplex signal generator to the antenna terminal. (2) Connect an oscilloscope to **L OUT** pin of the **AUDIO OUT**, and display one cycle portion of the 300Hz signal. (3) Change the connection of the oscilloscope to **R OUT** pin of the **AUDIO OUT**, and enlarge the voltage axis. (4) Select **"1.ADJUST"** from the SERVICE MODE. (5) Set the initial setting value of the **< T002 >** (LOWSEPA). (6) Adjust the **< T002 >** so that the stroke element of the 300Hz signal will become minimum. (7) Press the **[MUTING]** key to memorize the set value. (8) Input the stereo R signal (3kHz) and change the connection of the oscilloscope to **L OUT** pin of the **AUDIO OUT**. (9) Similarly adjust **< T003 >** (HIGHSEPA). (10) Press the **[MUTING]** key to memorize the set value.
				

SECTION 5
TROUBLESHOOTING

5.1 SELF CHECK FEATURE

5.1.1 OUTLINE

This unit comes with the "Self check" feature, which checks the operational state of the circuit and displays/saves it during failure.Diagnosis is performed when power is turned on, and information input to the main microcomputer is monitored at all time.Diagnosis is displayed in 2 ways via screen display and LED flashes. Failure detection is based on input state of I^2C bus and the various control lines connected to the main microcomputer.

5.1.2 HOW TO ENTER THE SELF CHECK MODE

Before entering the Self check mode, confirm that the setting of **TV/CATV** SW of the REMOTE CONTROL UNIT is at the **"TV"** side and the setting of **VCR/DVD** SW is at the **"VCR"** side. If the switches have not been properly set, you cannot enter the Self check mode.

(1) Set to "**0 minutes**" using the **[SLEEP TIMER]** key.
(2) While **"0 minutes"** is displayed, press the **[VIDEO STATUS]** key and **[DISPLAY]** key simultaneously, then enter the service mode.
(3) Press the **[2]** key (SELF CHECK) before the service mode screen disappears.
(4) Self check mode screen is displayed.
(5) Press the **[SLEEP TIMER]** key to enter Page 2 of the SELF CHECK MODE.
- When the **[RETURN+]** key pressed, the first page change screen.

NOTE:

When a number key other than the **[2]** key is pressed in the SERVICE MENU SCREEN, the other relevant screen may be displayed.
This is not used in the SELF CHECK. Press the **[MENU]** key to return to the SERVICE MENU SCREEN.

5.1.3 HOW TO EXIT THE SELF CHECK MODE

TO SAVE FAILURE HISTORY:

Turn off the power by unplugging the AC power cord plug when in the Self check mode.

TO CLEAR (RESET) FAILURE HISTORY:

Turn off the power by pressing the **[POWER]** key on the remote control unit when in the Self check mode.

5.1.4 FAILURE HISTORY

Failure history can be counted up to 9 times for each item. When the number exceeds 9, display will remain as 9. Failure history will be stored in the memory unless it has been deleted.

5.1.5 POINTS TO NOTE WHEN USING THE SELF CHECK FEATURE

In addition to circuit failures (abnormal operation), the following cases may also be diagnosed as "Abnormal" and displayed and counted as "NG".

(1) Temporary defective transmissions across circuits due to pulse interruptions
(2) Misalignment in the on/off timing of power for I^2C bus (VCC) when turning on/off the main power.

Diagnosis may be impeded if a large number of items are displayed as "NG". As such, start Self check check only after 3 seconds in the case of receivers and 5 seconds in the case of panels upon turning on the power. If recurrences are expected, ensure to clear (reset) the failure history and record the new diagnosis reults.

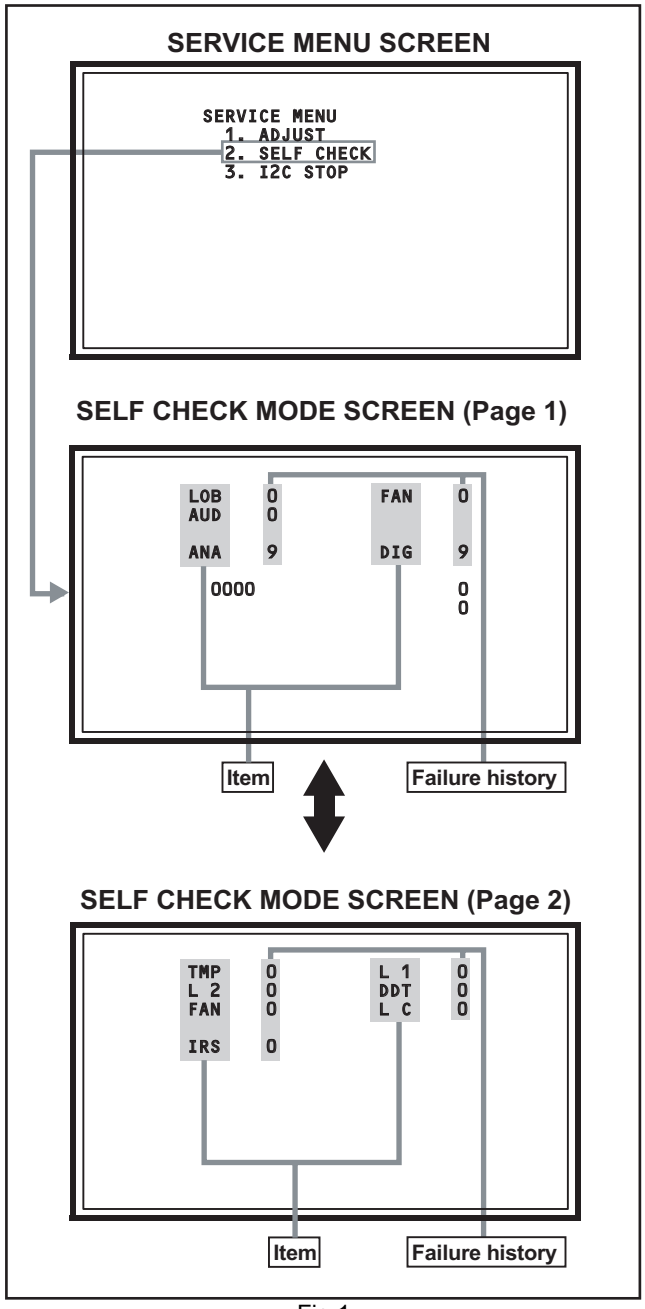


Fig.1

5.1.6 DETAILS

Self check is performed for the following items:

< Page 1 of screen >

Detection item	Display	Detection content	Diagnosis signal (line)	Detection timing
Low bias line short protection	LOB	Detection of the low bias line(5V/9V/12V) short. Q9821, Q9831, Q9861 **[POWER PWB]**	LB_PRO	Detection starts 3 seconds after the power is turned on. If error continues between 1000ms the power is turned off.
Fan lock	FAN	Not used	----	----
Audio	AUD	Not used	----	----
Devices on the ANALOG PWB and the TUNER PWB	ANA	Confirmation of reply of ACK signal which uses I^2C communication. IC101, IC102, IC281, IC381, IC601, IC606 **[ANALOG PWB]** IC061,TU001 **[TUNER PWB]**	SDA	If it checks whenever I^2C communication is performed and no reply of ACK signal an error will be counted.
Devices on the DIGITAL PWB	DIG	Not used	----	----

< Page 2 of screen >

Detection item	Display	Detection content	Diagnosis signal (line)	Detection timing
Temp. sensor	TMP	Confirmation of the abnormal inner cabinet temperature. (53°C) IC2001 **[THERMO PWB]**	TXD	It will count if the serial communication from a DD MICOM is always supervised and an error occurs.
Lamp does not light up	L1	Confirm that the lamp dose not light up. CNBCT1 **[DRIVE PWB]**	TXD	It will count if the serial communication from a DD MICOM is always supervised and an error occurs.
Lamp goes out	L2	Confirm that the lamp dose not goes out. CNBCT1 **[DRIVE PWB]**	TXD	It will count if the serial communication from a DD MICOM is always supervised and an error occurs.
Abnormal DD CPU circuit	DDT	Confirmation of the serial communication error between DRIVE PWB and DIGITAL PWB. IC3701 **[DRIVE PWB]**	TXD	It will count if the serial communication error is error occurs.
Fan lock	FAN	Confirmation of the lock signals outputting the operation(circuit) status of the cooling fan. IC8005 **[DRIVE PWB]**	TXD	It will count if the serial communication from a DD MICOM is always supervised and an error occurs.
Lamp cover open	LC	Confirmation of the interlock switch status for the lamp cover. S0861 **[LAMP COVER SW PWB]**	TXD	It will count if the serial communication from a DD MICOM is always supervised and an error occurs.
Abnormal of optical iris	IRS	Confirmation of the abnormal optical iris operation. IC5005 **[IRIS PWB]**	TXD	It will count if the serial communication from a DD MICOM is always supervised and an error occurs.

5.1.7 DISPLAY METHOD WHEN RASTER IS NOT AVAILABLE

In a state where a display screen does not appear due to the failure of this unit, the POWER LED (blue) and LAMP/PROGRAM LED (orange) can be flushing and display a trouble mode.
The factors in case the power is forcibly shut down at the time of failure are memorized and those are displayed.

Check item	Contents	Classifications	LED flash cycle	
			POWER LED (BLUE)	LAMP/ PROGRAM LED (ORANGE)
Fan lock (stop) for ATSC tuner	Detection of the Fan lock (stop). The ATSC TUNER MODULE detects it, and MAIN CPU receives the error command from the ATSC TUNER MODULE. CN110 [18]pin, [19]pin **[DIGITAL PWB]**	1	---	2 sec interval
Low bias line short protection	Detection of the low bias line(5V/9V/12V) short. Q9821, Q9831, Q9861 **[POWER PWB]**	2	---	1 sec interval
Lamp cover open	Detection of the interlock switch status for the lamp cover. (H = Abnormal) S0861 **[LAMP COVER SW PWB]**	3	0.1 sec interval Simultaneously	
Lamp goes out	Detection of lamp return (LAMP_RTN) signals output depending on the status of the lamp supply electric current monitored constantly within the lamp ballast unit. (H =Off) CNBCT1 **[DRIVE PWB]**	6	0.1 sec interval Simultaneously	
Lamp does not light up	Detection of lamp return (LAMP_RTN) signals output depending on the status of the lamp supply electric current monitored constantly within the lamp ballast unit. (H = Off) CNBCT1 **[DRIVE PWB]**	6	0.1 sec interval Simultaneously	
Fan lock (stop) for optical system	Detection of LOCK signals outputting the operation (circuit) status of the cooling fan. (H=Abnormal) IC8005 **[DRIVE PWB]**	4	0.5 sec interval Alternately	
Abnormal DD CPU circuit	Detection of serial communication error between MAIN DRIVE PWB and RECEIVER PWB. IC3701 **[DRIVE PWB]**	5	0.5 sec interval Alternately	
Abnormal D-ILA DEVICE temperature	Detection of abnormal inner cabinet temperature. (53°C) IC2001 **[THERMO PWB]**	7	0.5 sec interval Alternately	

EXPLANATION ON ACTION

If NG is detected on an item being diagnosed, turn off the power on this unit. As soon as the power goes off, turn on and off POWER LED and LAMP LED immediately. After the power is shut down, it becomes impossible to turn on the power until the power cable is either plugged in or unplugged from the AC outlet.

- When the error of [1] or [2] occur, [3], [4], [5], [6], [7] are no longer recognized.

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